IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

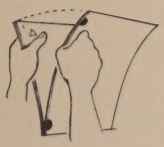
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

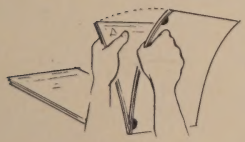


1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 532 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ MAY 1961

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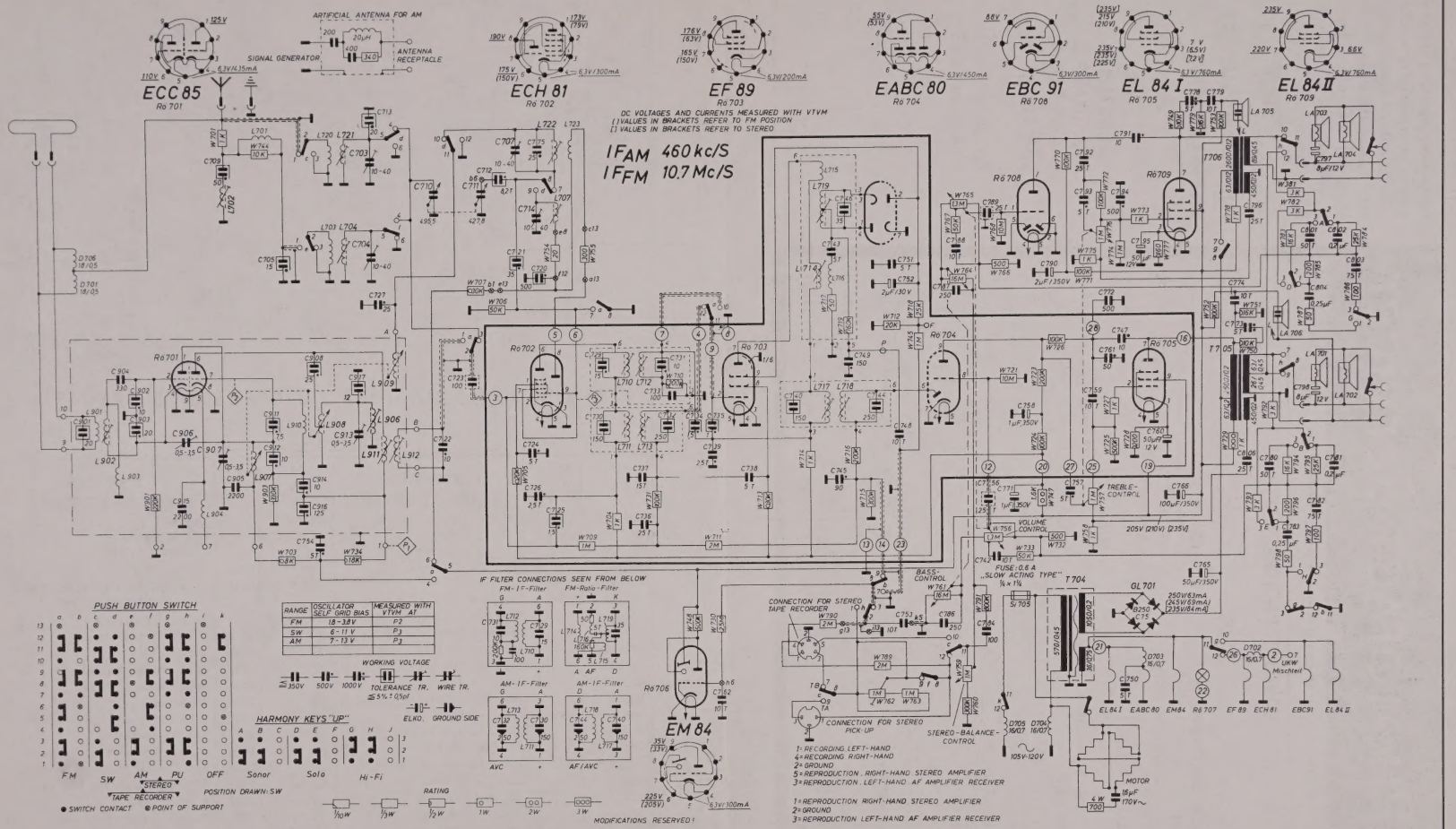
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

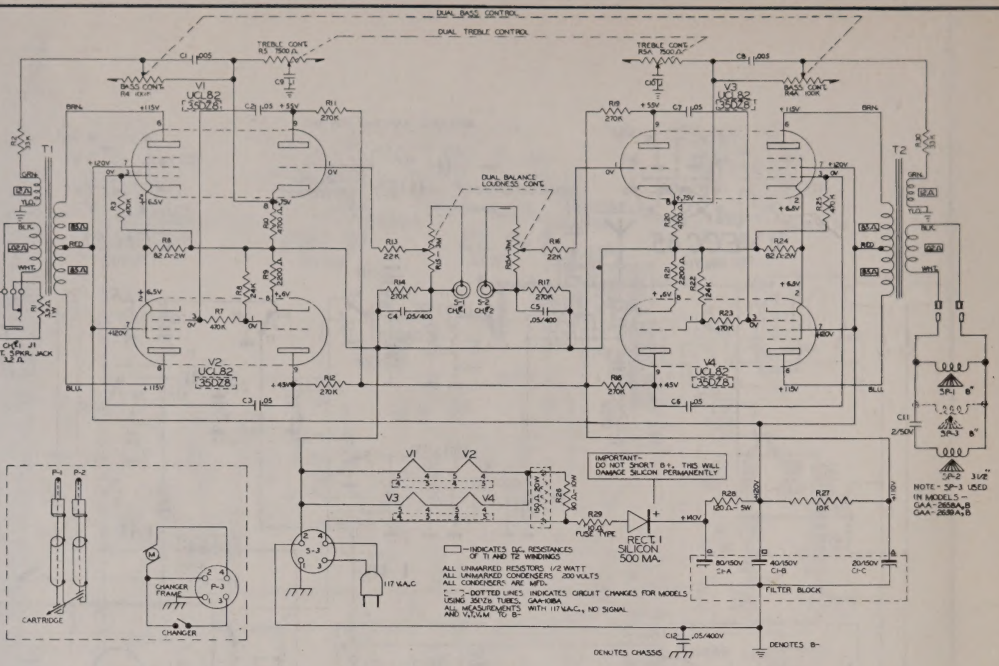
Airline Models
GAA-1018A, B, C,
GAA-2658A, B,
GAA-2659A, B

Blaupunkt Model
Amazonas 4613



BLAUPUNKT MODEL AMAZONAS 4613

Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company



AIRLINE MODELS GAA-1018A, B, C, GAA-2658A, B, GAA-2659A, B

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
		RESISTORS & CONDENSERS			RESISTORS & CONDENSERS
R28	604C	120 Ohm 5 Watt	C6, C7		.05 MFD
R1	561B	3.9 Ohm 1 Watt	C4, C5, C12		.05 MFD 400V DC
R2, R30		33K Ohm 1/2 Watt	C9, C10		.1 MFD 200V DC
R3, R7,		470K Ohm 1/2 Watt	C11	830A	2 MFD 50V Cond.
R23, R25			C1A, B, C	1018	80/40/20 150V DC Filt. Cond.
R4, R4A	429B	100K Ohm Tandem Control			MISCELLANEOUS
R5, R5A	427A	7500 Ohm Tandem Control	T1	1214	Output Transformers
R6, R24		82 Ohm 2 Watt	T2	1214A	Output Transformers
R8, R22		24K Ohm 1/2 Watt	J1	1948	Output Jack
R9, R21		2200 Ohm 1/2 Watt		2462	Knob (Balance-Loudness)
R10, R20		4700 Ohm 1/2 Watt		2438	Knob (Bass-Treble)
R11, R12,		270K Ohm 1/2 Watt	SP1	2640	8" Speaker
R14, R17			SP3	2640A	8" Speaker
R18, R19		270K Ohm 1/2 Watt	SP2	2641	3-1/2" Speaker
R13, R16		22K Ohm 1/2 Watt	S1, S2	104A	Single Prong Phono Socket
R15, R15A	427	3 Meg Tandem Bal.-Loud.		1963	Lid Counter Balance Assembly
R26	652	150 Ohm 20 Watt	Rect. 1	2760	Silicon Rectifier 500 MA
R27		10K Ohm 1/2 Watt	S3	107A	4 Prong Socket
R29	649	10 Ohm Fuse Type	P1, P2	305	Single Prong Phono Plug
C1, C8		.005 Discap	P3	307C	4 Prong Amphenol Plug
C2, C3		.05 MFD 200V DC			Cartridge, Astatic 13T (use 60-60)
					Cartridge Holder (use 60-62)

Schematic Diagram Courtesy of Montgomery Ward & Company

PHOTOFACT® Folder

INDEX

A cumulative index is included as a part of this Folder. Upon finding that a new tube is not listed on the roll chart of a tester covered in this service, refer to the latest Tube Tester Data Index to determine in which PHOTOFACT Set the data was published. If listed, reference to that Folder will provide the necessary data.

TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.
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2FQ5	524	6EQ7	516	8ET7	516
2FY5	512	6ES8	524†	10EM7	532
3ES5	524	6FA7	524	12BZ6	524†
3EV5	512	6FG7	516	12DY8	516
4AV6	532	6FQ5	524	12GW6	528
4ES8	524	6FQ7	532	13EM7	512
4GS8	516	6FS5	520	17DM4	532
5DJ4	528	6FW5	520	17GW6	528
6AJ8	524†	6GW6	528	19EZ8	524
6AL3	524	6GW8	528	34GD5	508
6CB5	524†	6GX6	532	VR75	524†
6CB6	524†	6HF8	532	7695	512
6CD6	524†	6HG8	528	7701	520
6CD7	512	6HJ8	516	7716	520

† See Correction Notice

JACKSON MODEL 598

Set 532

SUPPLEMENTS LATEST ROLL CHART 598-3

Tube Type	A.	B.	C.	Fil. Cont.	D.	E.	F.	G.
4AV6	4.2	3	4		7	1Z		50
	"	3			5	Z		66
	"	3			6	Z		66
6FQ7	6.3	4	5		6	7		34
	"	4			1	2		34
6GX6	6.3	3Y	4		5	1Z	6	66
6HF8	6.3	4Y	5		9	7Z	8	63
	"	"			3	2		64
10EM7	Set line to 75% mark							
	9.4	8Z	7		5	4		80
	"	"			2	1		30
17DM4	17.	8	7		5			17

JACKSON MODEL 648

Set 532

SUPPLEMENTS LATEST ROLL CHART 648-24

Tube Type	Fil.	D.	E.	Plate Test
4AV6	4.2	A237	AC14	35 WX
	"	"	5	80 X
	"	"	6	80 X
6FQ7	6.3	A127	A89	20 WY
	"	A123	A45	"
6GX6	6.3	A2347	AC156	54 YZ
6HF8	6.3	A128	679	55 Z
	"	A124	A35	48 YZ
10EM7	10.5	238	AC56	22 XZ
	"	234	A17	22 Z
17DM4	17.	234	6	14 W

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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TUBE TESTER DATA • SET 532

JACKSON
MODEL 658

SUPPLEMENTS LATEST ROLL CHART 658-4

Tube Type	Sec.	Circuit Heater	H-K	P-G	Plate	Grid Test	Heater Current	
4AV6	T	4.0N	127	ac34	27Q	10XY•		
	D	"	"	5	75	X		
	D	"	"	6	75	X	A10.6G	Z450
6FQ7	T	6.4J	127	a89	16Q	30WY•		
	T	"	123	a45	"	"	A13.6M	Z450
6GX6	P	6.4K	1247	ac356	18R	10XY•	A13.6H	Z450
6HF8	P	6.4K	128	679	21R	20WY•		
	T	"	124	a35	15R	7XY•		
10EM7	T	10.6H	238	ac56	20Q	15XY•		
	T	"	234	a17	16R	70VY•	A18.6L	Z600
17DM4	D	18.6K	234	6	19U	V	A22.N	Z450

PHOTOFACT® Folder with CIRCUITRACE®

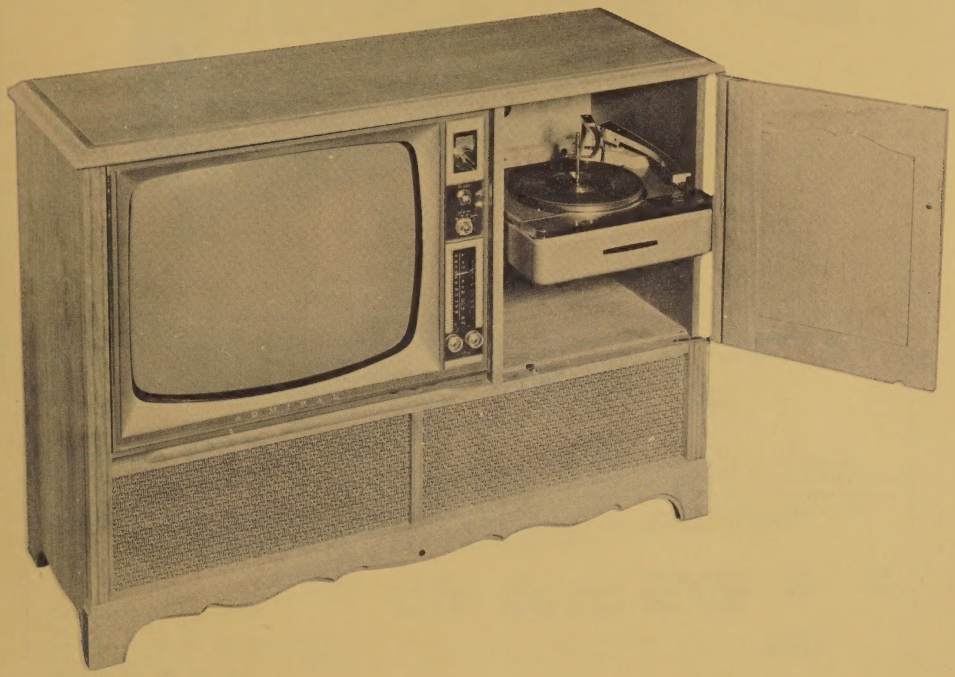
ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B



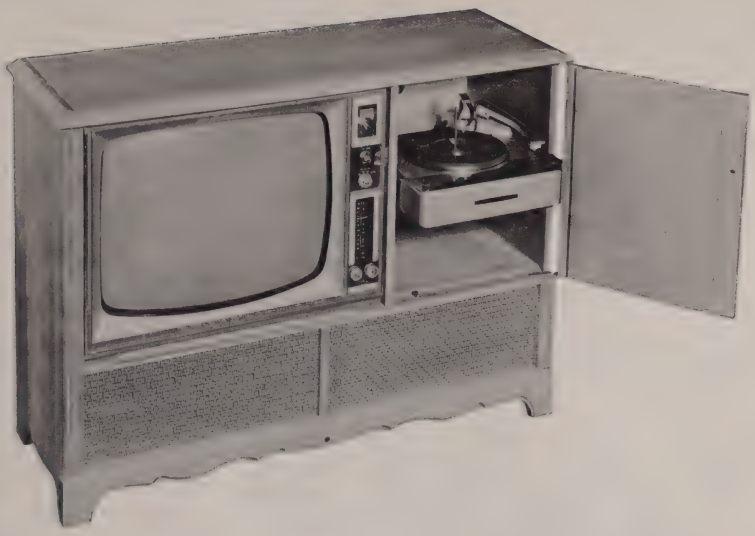
ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

MODEL STF24M169

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 532 FOLDER 1



MODEL STF24M169

TRADE NAME	Admiral
MANUFACTURER	Admiral Sales Corp., Service Division, 903 Morrissey Drive, P.O. Box 845, Bloomington, Illinois
TYPE SET	Television Receiver (Some Models with AM Tuner, FM-AM Tuner, Stereo Audio Amp., 4 Speed Automatic Record Changer, Remote Control).
TUBES	TV: VHF (Chassis 20A7, B - Seventeen VHF (Chassis 20C7) - Eighteen VHF (Chassis 20B7) - Seventeen UHF (Chassis 20UA7, B) - Eighteen FM-AM Tuner 7X1: Six AM Tuner 3V1: Three
TRANSISTORS	Remote Control Receiver 7E2A: Seven
POWER SUPPLY RATING	110 - 120 Volts AC, 60 Cycle TV (Chassis 20C7): 210 Watts, 1.85 Amp. @ 117 Volts AC (Selector Sw. in TV Position) FM-AM Tuner (Chassis 7X1): 160 Watts, 1.35 Amp. @ 117 Volts AC (Selector Sw. in AM or FM Position) 135 Watts, 1.2 Amp. @ 117 Volts AC (In Phono Pos., Less Phono Motor)
TUNING RANGE	TV: Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) FM-AM Tuner (Chassis 7X1): FM - 88-108MC (IF 10.7MC) BC - 540-1600KC (IF 455KC) AM Tuner (Chassis 3V1): BC - 540-1600KC (IF 455KC)

MODELS		TV Chassis (Run 10, 11, 12)	FM-AM Tuner Chassis (Run 10, 11)	AM Tuner Chassis	Record Changer	Remote Control Receiver, Transmitter Chassis	VHF Tuner	UHF Tuner
C24M121, 122, 123, 131, 132, 133, 142, 149, 171, 172, 189; L24M151, 152, 153, 161, 162, 169; T24M110, 111, 112, 113	or	20A7					94E184-10	
		20A7B					94E188-1	
CS24M131, 132, 133, 142, 149; LS24M152, 159, 161, 169; TS24M120, 122, 123		20B7				7EA2A & S121C	94E164-15	
STA24M120, 121, 122, 123, 132, 139, 141, 149		20C7		3V1	*		94E164-10	
STA24M151, 152, 153, 162, 169, 171, 179		20C7	7X1		*		94E164-10	
C24UM121, 122, 123, 131, 132, 133, 142, 149, 171, 172, 189; L24UM151, 152, 153, 161, 162, 169; T24UM110, 111, 112, 113	or	20UA7					94E164-11	94D162-9
		20UA7B					94E188-2	94D162-9

* FOR SERVICE INFORMATION ON RECORD CHANGER RC7FOG-17W OR RC7EOG-17W - SEE SIMILAR RC700 SERIES - PHOTOFACT SET 529 FOLDER 3

SERVICING IN THE FIELD - PAGE 3

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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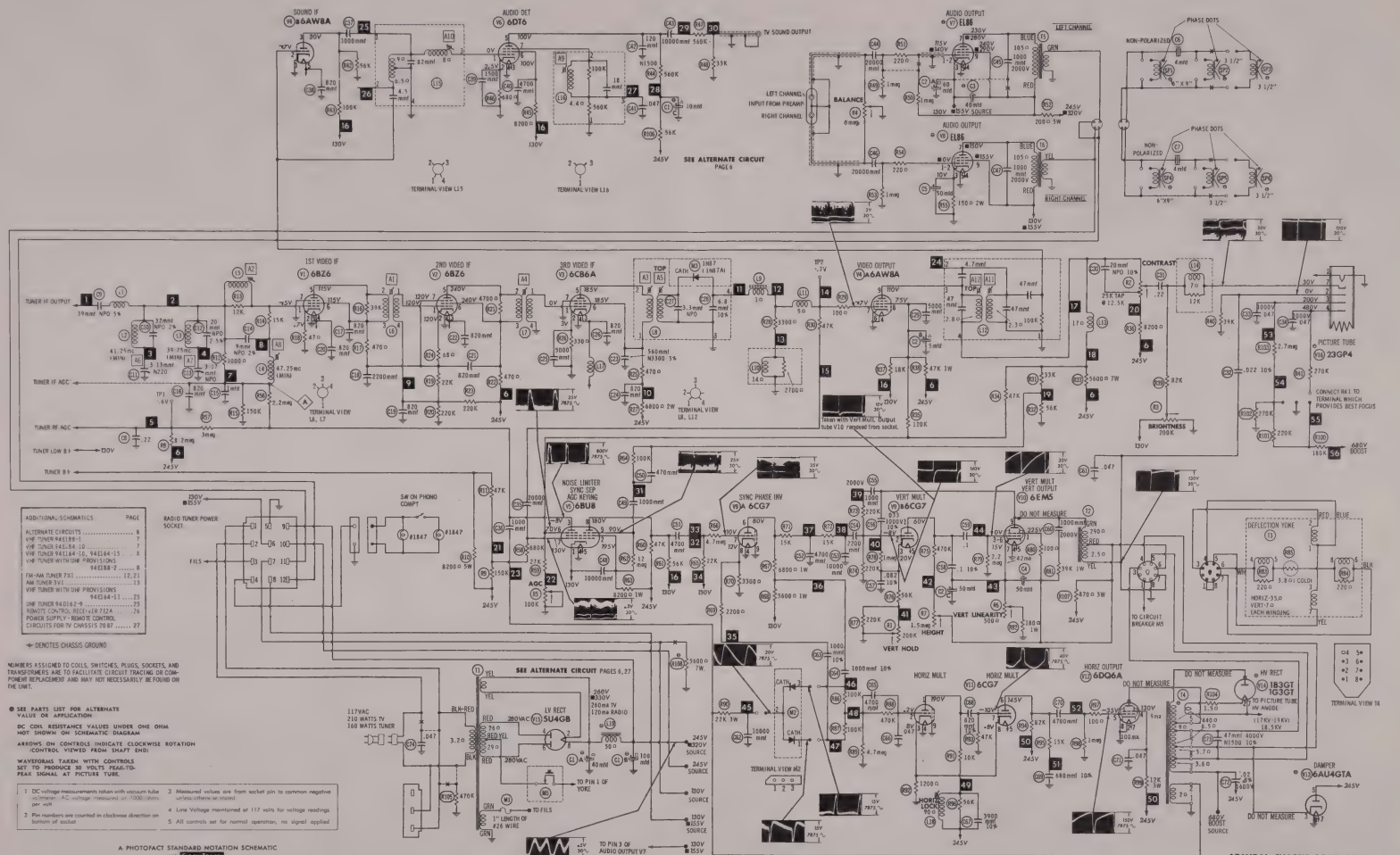
KC622

ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

SET 532 FOLDER 1


SOUND IF W 6AWBA
AUDIO DET V6 6DT6
AUDIO OUTPUT V7 EL86
AUDIO OUTPUT V8 EL86
TV SOUND OUTPUT
LEFT CHANNEL
RIGHT CHANNEL
BALANCE
LEFT CHANNEL INPUT FROM PREAMP
RIGHT CHANNEL
SEE ALTERNATE CIRCUIT PAGE 6
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TERMINAL VIEW L16
PHASE DOTS
NON-POLARIZED
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6A
VIDEO OUTPUT W 6A6AWBA
CONTRAST
PICTURE TUBE V19 23GP4
BRIGHTNESS
680V BOOST
TUNER IF OUTPUT
TUNER IF AGC
TUNER RF AGC
TUNER LOW B+ 130V
TUNER B+
TERMINAL VIEW L8, L7
TERMINAL VIEW L8, L12
NOISE LIMITER SYNC SEP AGC KEYING V5 6BU8
SYNC PHASE INV V4 A 6CG7
VERT MULT V9 6CG7
VERT MULT VERT OUTPUT V10 6EM5
VERT LINEARITY
VERT HOLD
HEIGHT
HORIZ MULT V11 6CG7
HORIZ OUTPUT V12 6DQ6A
HORIZ LOCK
HV RECT V16 1B3GT 1G3GT
TO PICTURE TUBE HV ANODE
DAMPER V17 6AU4GTA
DO NOT MEASURE
TERMINAL VIEW M2
TERMINAL VIEW T4
SW ON PHONO COMPT
RADIO TUNER POWER SOCKET
FILS
SEE ALTERNATE CIRCUIT PAGES 6, 27
117VAC 210 WATTS TV 160 WATTS TUNER
LV RECT V15 5U4GB
260V 130V 260mA TV 120mA RADIO
TO PIN 1 OF YOKE
TO PIN 3 OF AUDIO OUTPUT V7
1" LENGTH OF #26 WIRE
DEFLECTION YOKE
HORIZ-35 VERT-7 EACH WINDING
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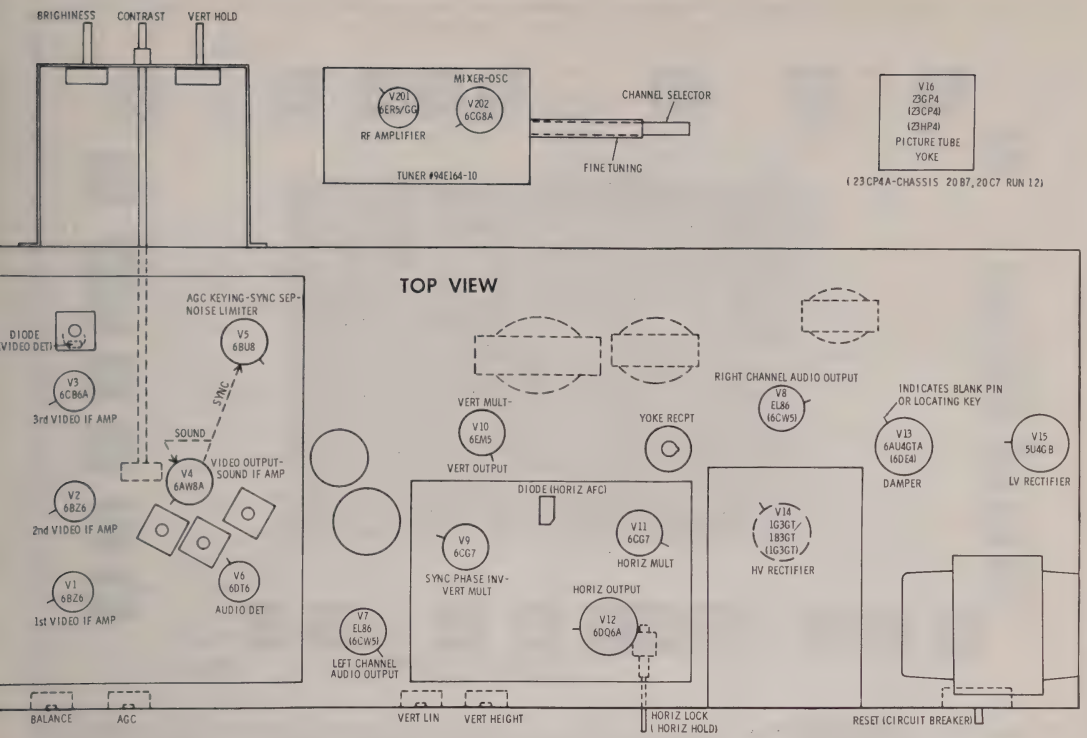
AM TUNER SV1 13
VHF TUNER WITH UHF PROVISIONS 94E184-11 25
UHF TUNER 94D162-9 25
REMOTE CONTROL RECEIVER 72A 26
POWER SUPPLY - REMOTE CONTROL CIRCUITS FOR TV CHASSIS 20 B7 27
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter (AC voltage measured on 1000 ohms per volt)
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1961
ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker (LV Power), V15, Fuse (Fil.)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9, V10
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4, V7
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V4, V6, V23
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V9
No horiz. sync V5, V9
No vert. or horiz. sync V5, V9

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)
NOTE: Some versions may use a S/B fuse as alternate. Replace with original type component.

FUSE

A fuse wire is used for filament protection. (For location, see M1 in photo "TV Chassis - Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch up VHF Oscillator adjustments (on models without Remote Control) it is necessary to remove Channel Selector knob and Channel Indicator Plate. On models with Remote Control, remove front Channel Indicator Escutcheon Plate.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

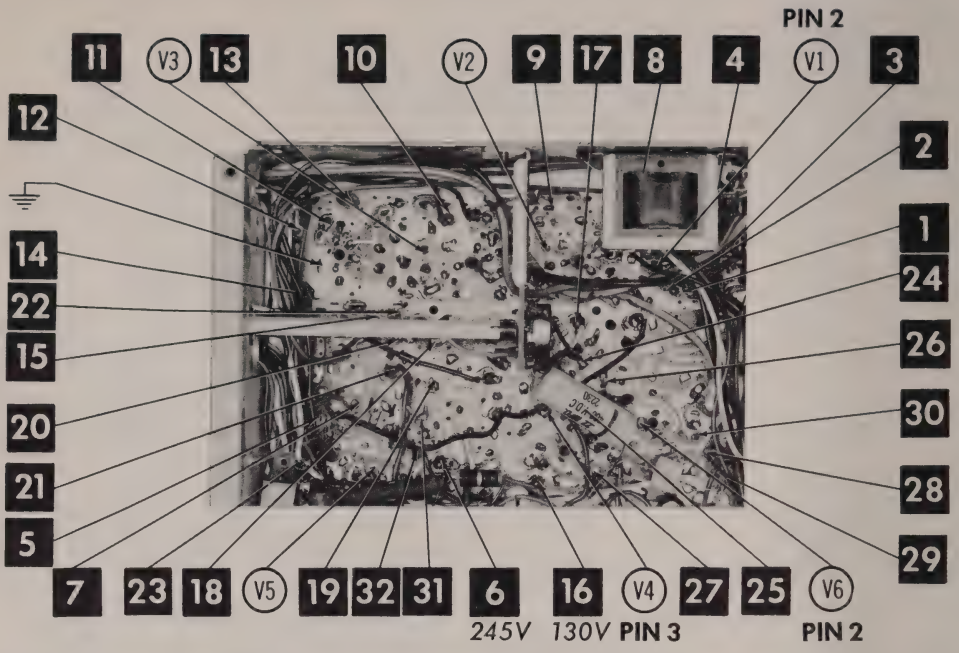
The focus may be varied by connecting the lead from pin 4 of the picture tube (thru 270K resistor) to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency Slug is used for the Horizontal Lock (Hold). (For location, see "Tube Placement Chart".)

CENTERING

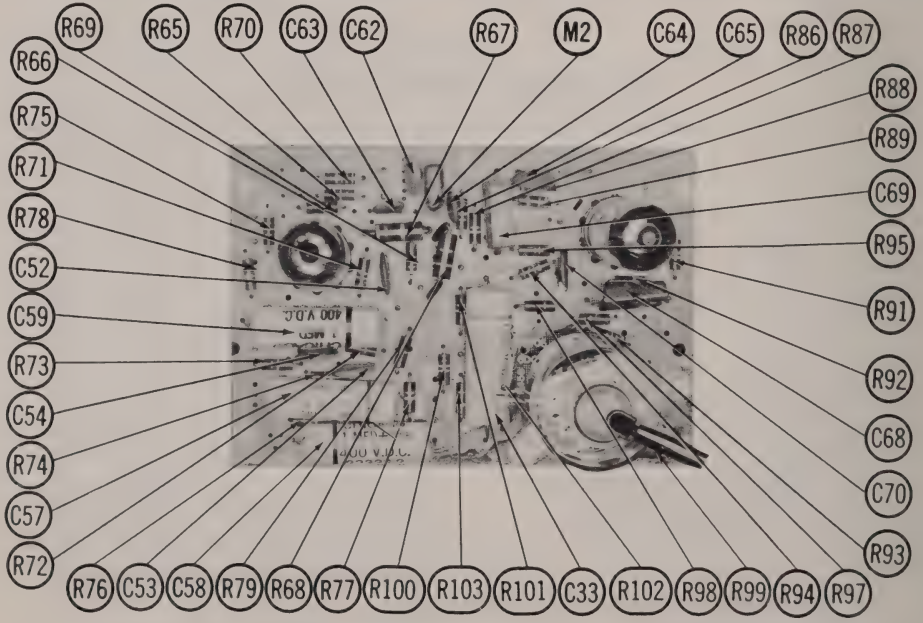
Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.



A Howard W. Sams CIRCUITRACE* Photo

MAIN PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD
VERT. - HORIZ. MULT., HORIZ. OUTPUT,
SYNC. PHASE INVERTER, HORIZ. AFC

ALIGNMENT INSTRUCTIONS
TV

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools:
A1 thru A5, A8 thru A12 ..... GENERAL CEMENT #828, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A) . Positive to chassis.
Connect a jumper across antenna terminals.
Connect a 270mmf capacitor across VTVM leads.
Set Contrast fully clockwise.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. (V202). Low side to chassis.	45.3MC	Any non-interfering channel	DC probe thru 10K to TP2. Common to chassis. (Video Det. load)	Mixer Plate Coil & A1	Adjust for maximum deflection.
2.	"	43.5MC	"	"	A2, A3	"
3.	"	41.5MC	"	"	A4	"
4.	"	42.0MC	"	"	A5	"
5.	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
6.	"	39.75MC	"	"	A7	"
7.	"	47.25MC	"	"	A8	"

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
If an external marker is used, couple loosely to sweep generator lead.
Connect a 270mmf capacitor across scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	High side to ungrounded tube shield floating over Mixer-Osc. (V202. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to TP2. Low side to chassis.		Check for response curve similar to Fig. 1 with markers as shown. If necessary, re-touch A1 thru A8 for desired response.

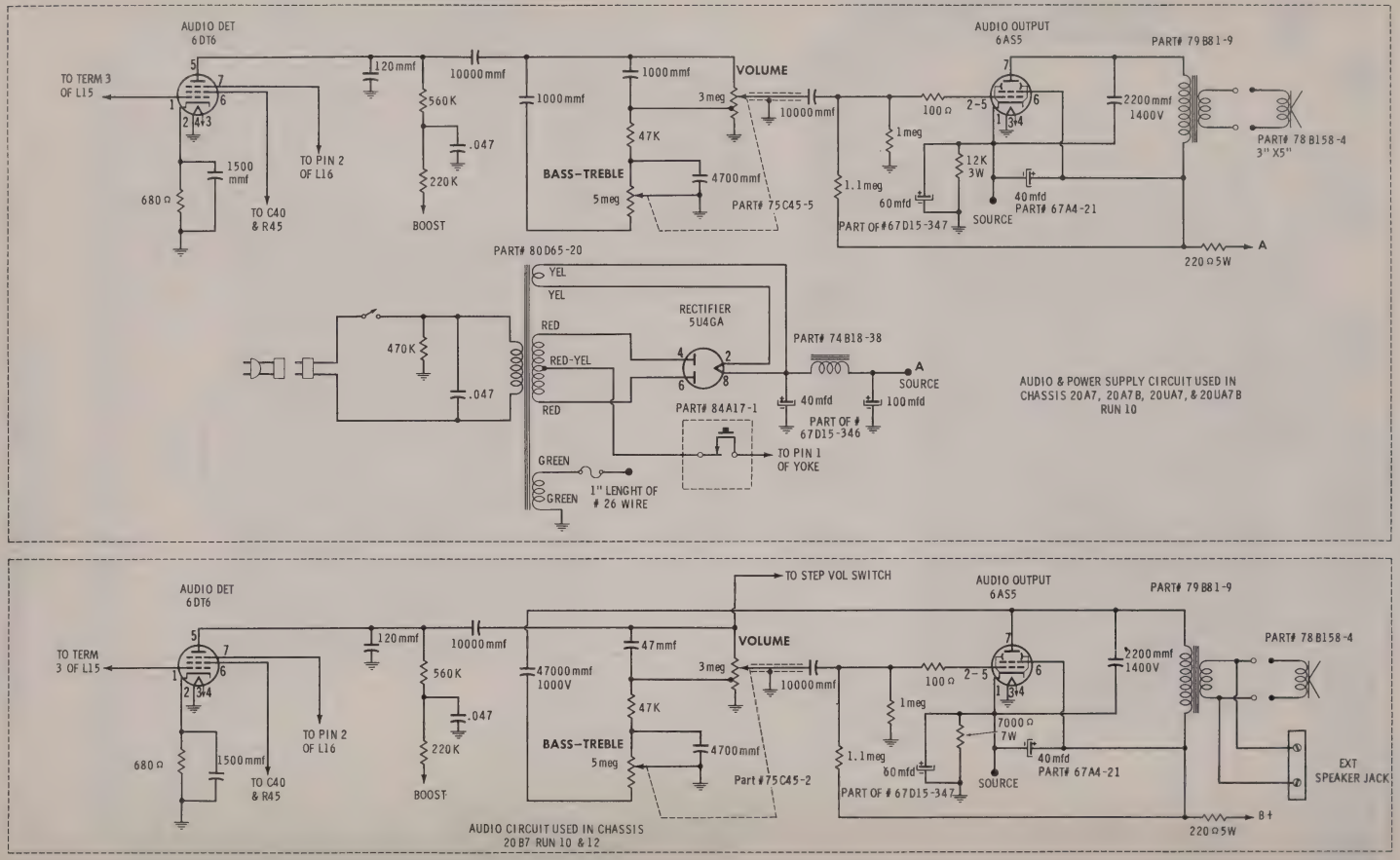
SOUND IF ALIGNMENT

Tune in the strongest TV station available in the area. Adjust set for normal operation. Turn A9 slowly counterclockwise until a buzz is heard in the sound, then clockwise for maximum undistorted sound. (If two such points are found to be present use second peak.) Reduce the signal at the antenna terminals until a strong hiss is heard and carefully adjust A10 and A11 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, reduce signal until hiss returns and readjust A10 and A11. If sound is unsatisfactory, repeat procedure.

4.5MC TRAP ALIGNMENT

Tune in strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A12 for MINIMUM beat interference.

FIG. 1



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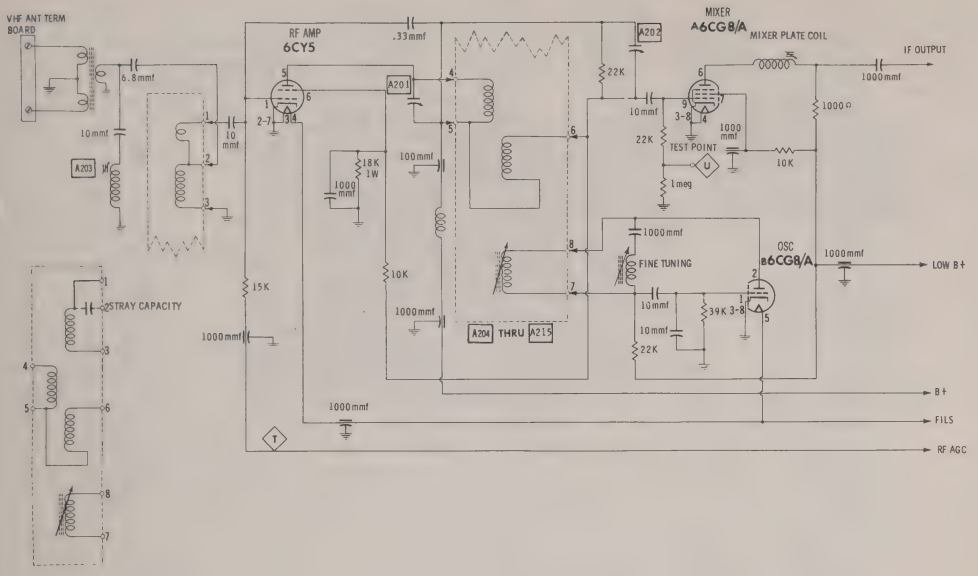
ALTERNATE CIRCUITS



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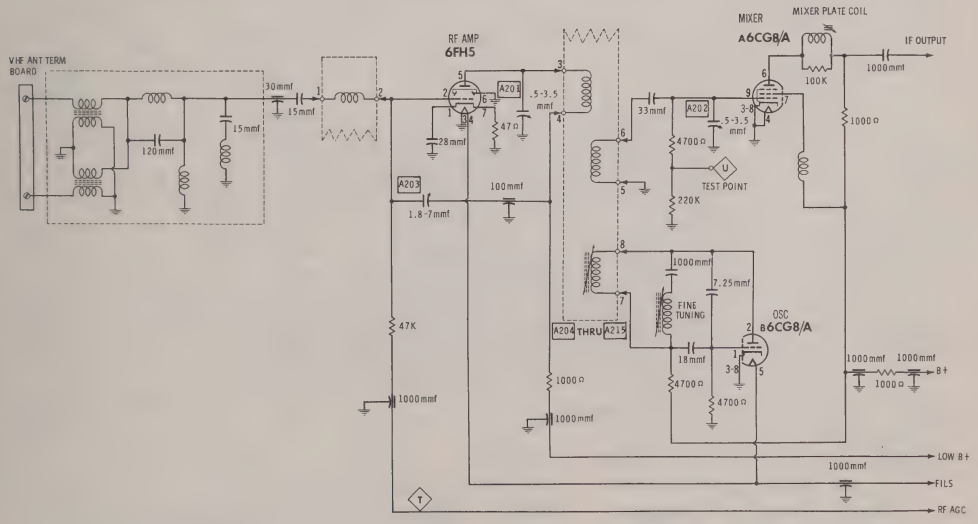
VHF TUNER 94E188-1



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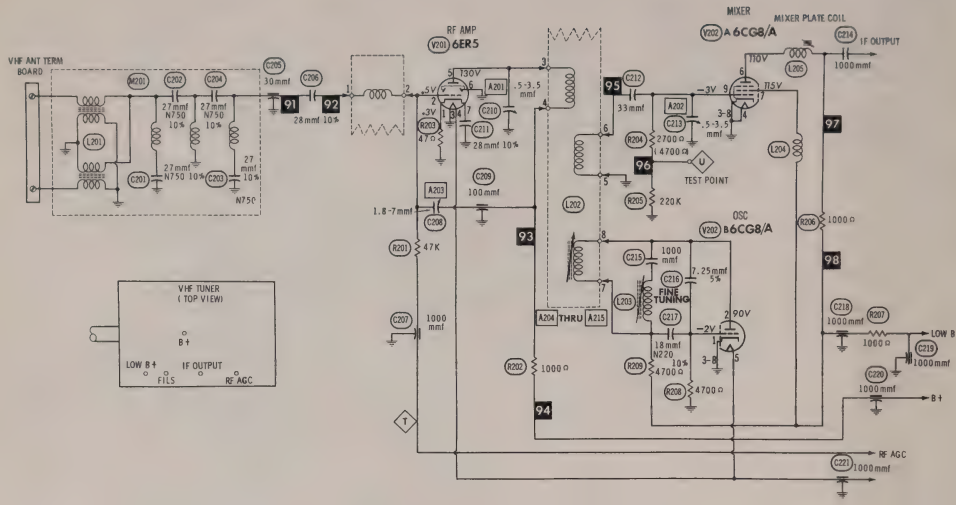
VHF TUNER 94E184-10

SET 532 FOLDER 1



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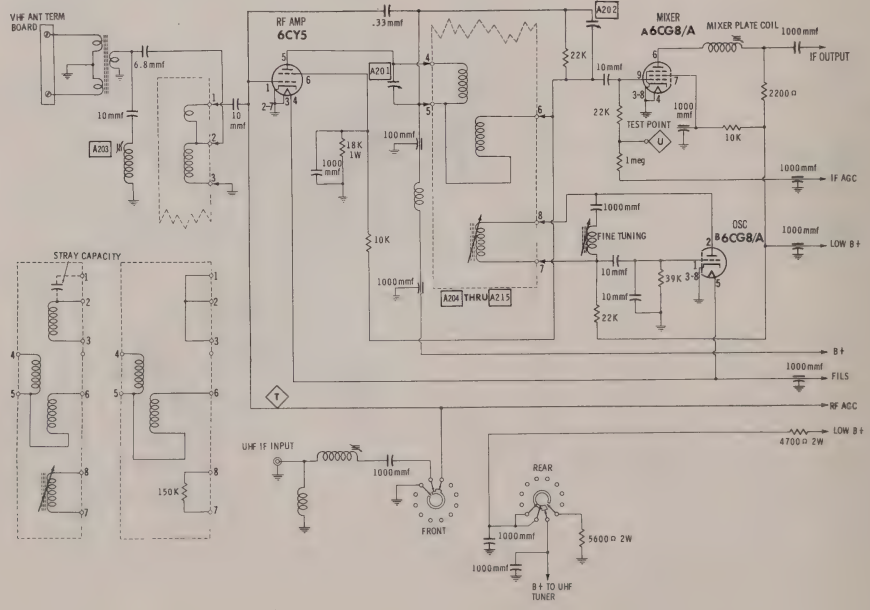
VHF TUNER 94E164-10, 94E164-15



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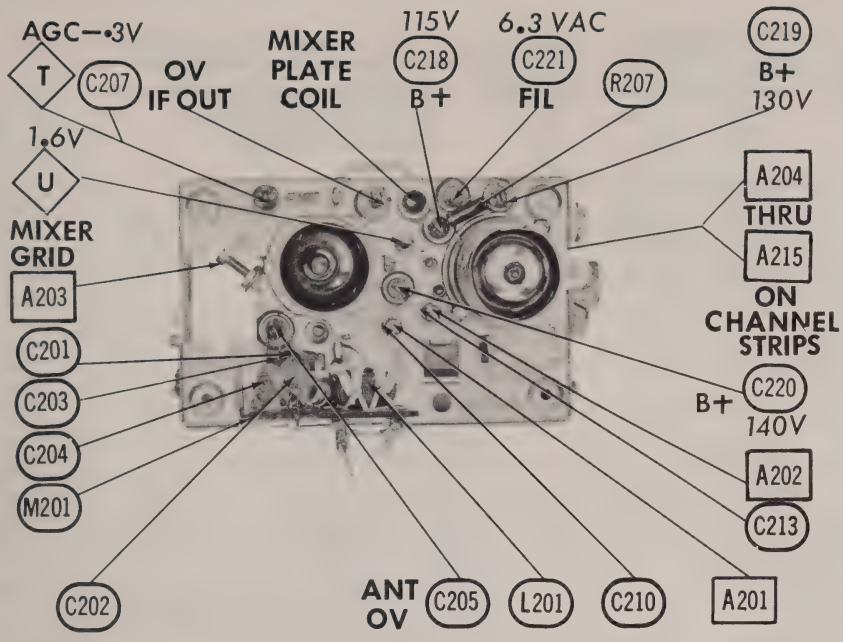
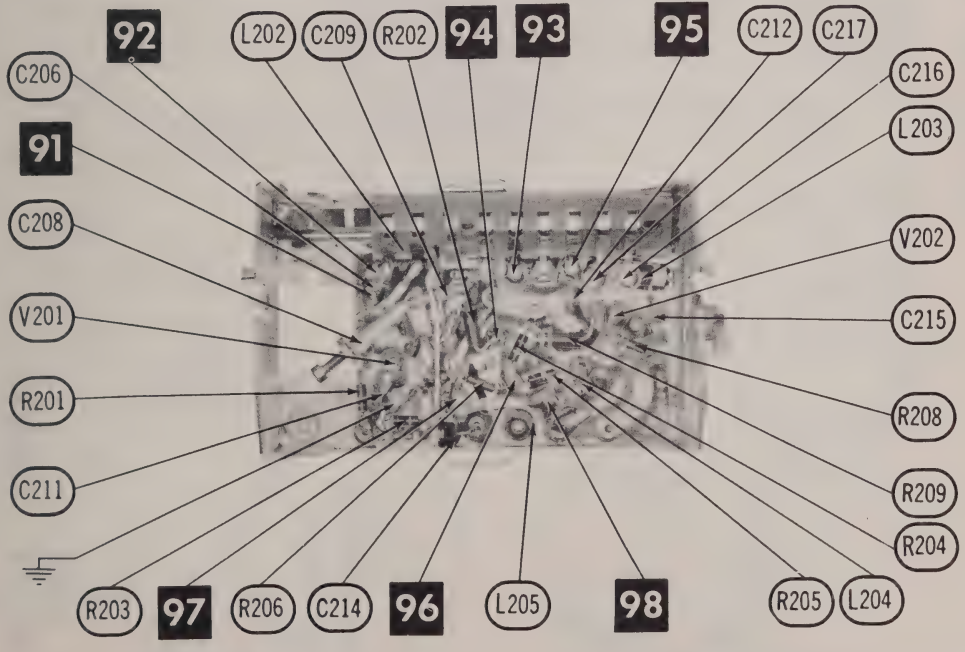
VHF TUNER WITH UHF PROVISIONS 94E188-2



VHF TUNER 94E164-10 - TOP VIEW



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ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 94E164-10 - BOTTOM VIEW

FM-AM TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
- A13 thru A16, A18, A20 thru A25 ... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440; WALSCO #2526, 2543, 2544, 2545
- A17, A19, A28, A29 ..... GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A26, A27 ..... GENERAL CEMENT #9051; WALSCO #2527

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid(of AM Converter. Low side to chassis.	455KC (440∿ 30% AM)	AM Tuning gang fully open	Across Voice Coil	A13, A14, A15, A16	Adjust for maximum output.
2.	Loop	1620KC	"	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	535KC	Tuning gang fully closed	"	A18	"
4.	"	1400KC	1400KC signal	"	A19	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side to ungrounded tube shield floating over FM Mixer tube. Low side to chassis.	10.7MC (Unmod.)	FM Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A20, A21, A22, A23 A24	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A25	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side to ungrounded tube shield floating over FM Mixer tube. Low side to chassis.	10.7MC (450KC Swp.)	FM Poin of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A20, A21, A22, A23 A24	Disconnect stabilizing capacitor C75. Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Reconnect C75.
6.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A25	Adjust to place marker at the center of crossover lines similar to Fig. 3. SLIGHTLY retouch A20 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	88MC (Unmod.)	FM 88MC	DC probe to point Ⓑ. Common to chassis.	A26, A27	Adjust for maximum deflection.
8.	"	108MC	108MC	"	A28, A29	"
9.	"	88MC	88MC	"		Readjust A26 and A27 for maximum deflection. After adjusting, seal screws with melted wax or glytol.

FIG. 2

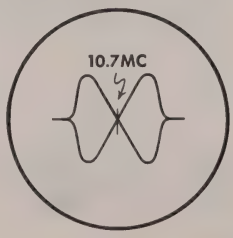
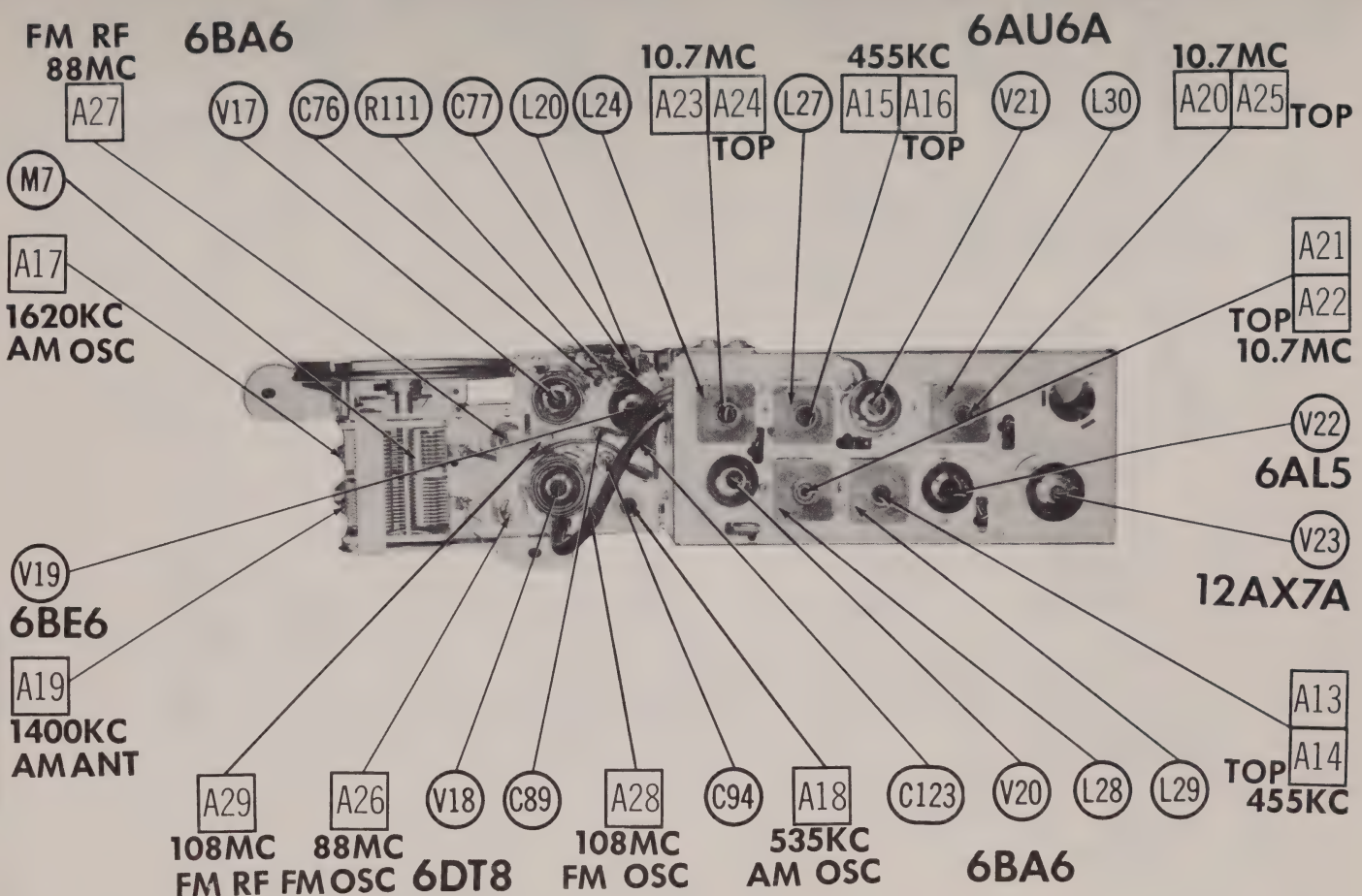
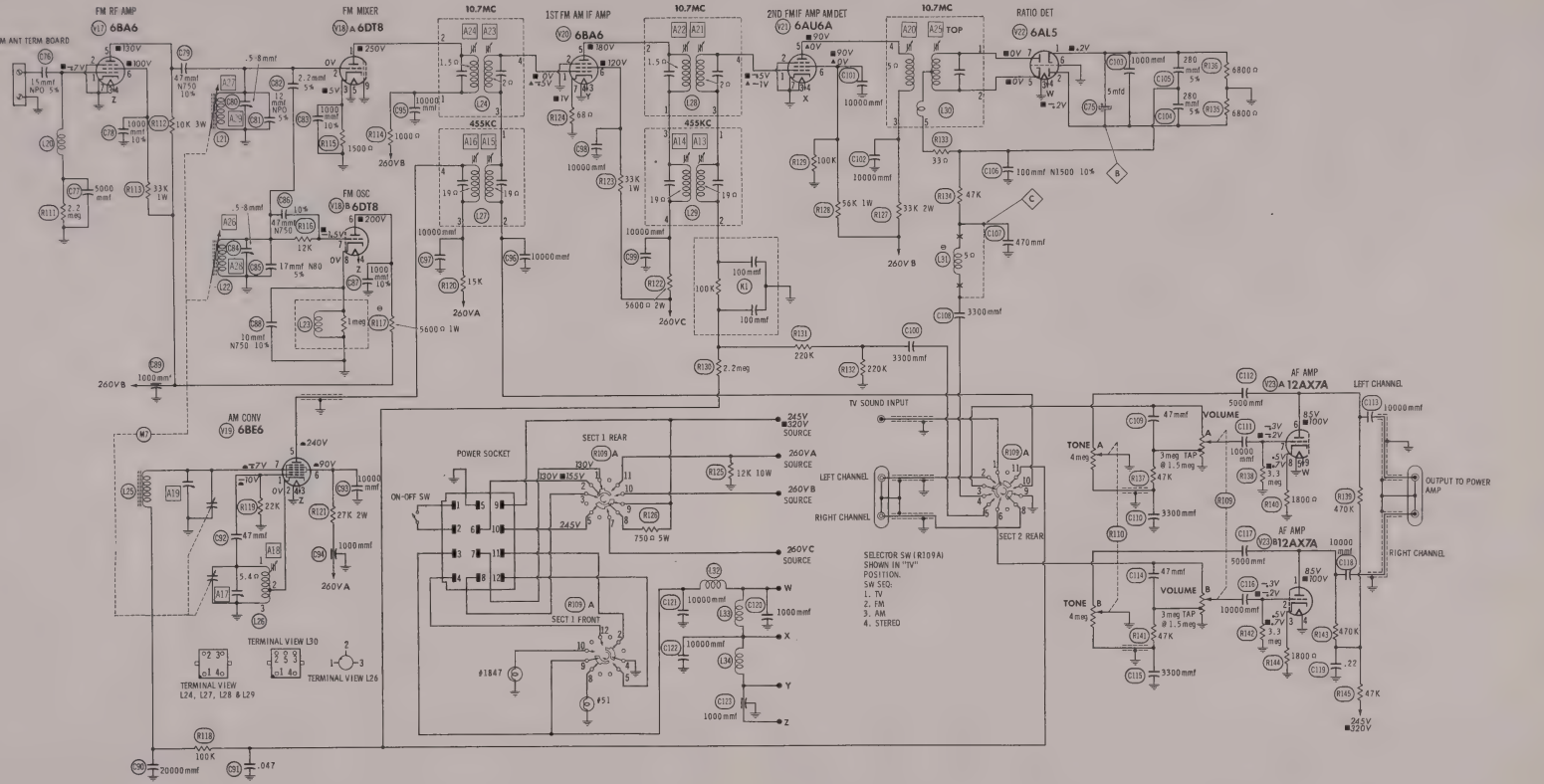


FIG. 3



FM-AM TUNER 7X1 - TOP VIEW

ADMIRAL CHASSIS 20A7, 20A7B,
20B7, 20C7, 20UA7, 20UA7B



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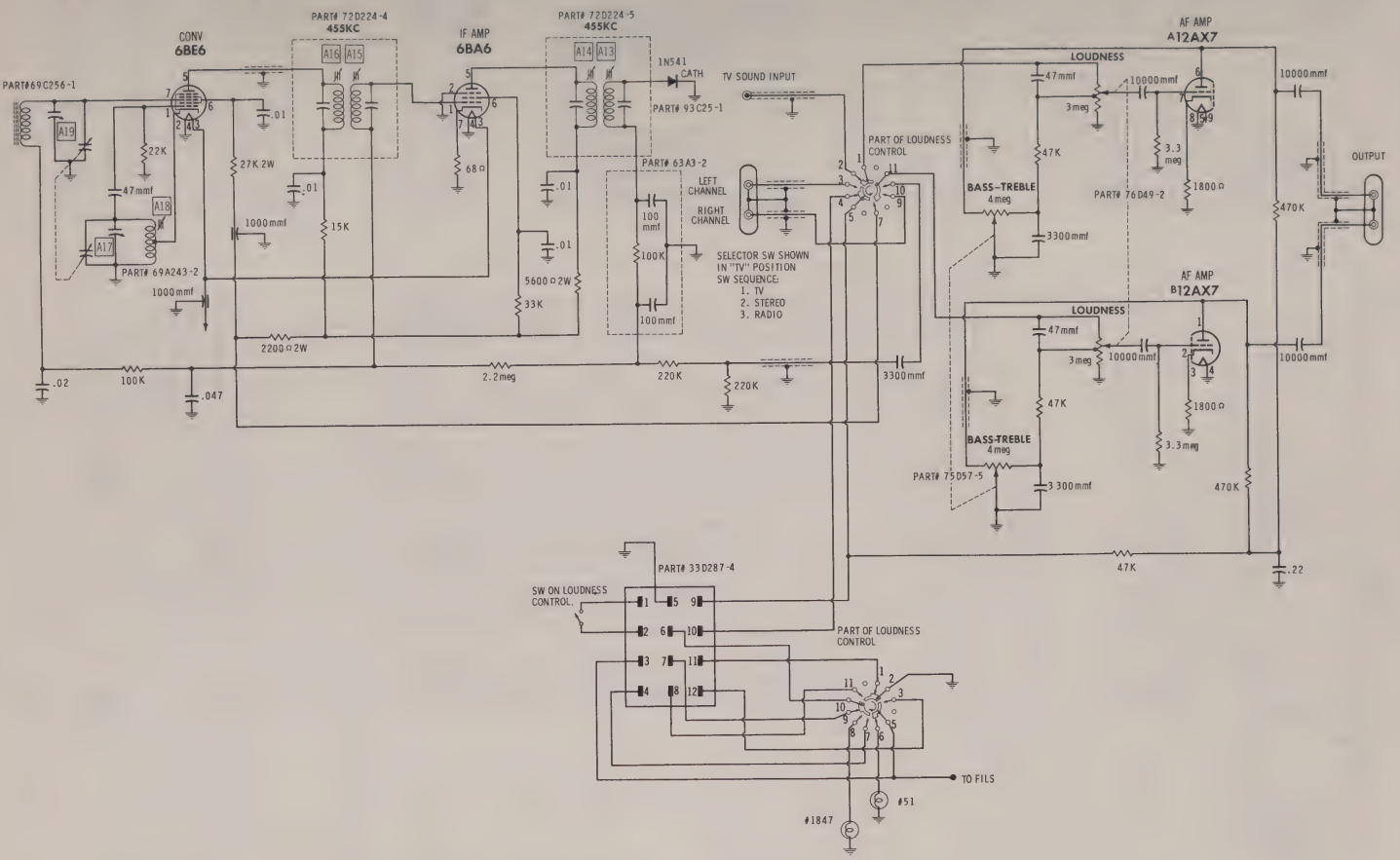
FM-AM TUNER 7X1



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AM TUNER 3V1

ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

FM—AM TUNER PARTS LIST AND DESCRIPTIONS

7E2A

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •				
V17	FM RF Amp.	6BA6	V21	2nd FM IF Amp. - AM Detector	6AU8A
V18	FM Mixer - FM Osc	6DT8			
V19	AM Converter	6BE6	V22	FM Ratio Detector	6AL5
V20	1st FM IF Amp. - AM IF Amp.	6BA6	V23	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C75	5	50	67B4-55	PRR310	BSR5-50	TC50	TD-5-50	TVA-1303	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C75	15	NPO	5%		NPO-DI 15	DTZ-15	C09Q15C	CCTO-150	CNO-515	10TCC-Q15
C77	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C78	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C79	47	N750	10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C80	1.5-8			#66A38-8		529-7		*		
C81	12	NPO	5%			TCZ-12	C10Q12C	CCTO-120	CNO-612	10TCC-Q12
C82	2.2		5%		NPO-SI 2.2	TCZ-2R2	C10Y22	CCTO-2R2	CNO-522	10TCC-Y22
C83	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C84	1.5-8			#66A38-8		529-7		*		
C85	LT	N80	5%	#66DI0-230						
C86	47	N750	10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C87	1000		10%		DI-1000	DD-102	S85DI	CCD-103	GP210	10TS-D10
C88	10	N750	10%		N750-DI 10	DTN-10	C10QU	CCTN-100		10TCU-Q10
C89	1000				EF-001	MFT-1000		CCF-102	CT280A	
C90	20000				BPD-023	DD-203	BYB5S2	CCD-203	B-1-20	5HK-S20
C91	.047	100V			P388N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	2TM-S47
C92	47				DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C93	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C94	1000				EF-001	MFT-1000		CCF-102	CT280A	
C95	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C96	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C97	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C98	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C99	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C100	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C101	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C102	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C103	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C104	380		5%		1489-00027	TCZ-270	5RST2T	CM-19B-27UJ	CNO-327	MS-327
C105	380		5%		1489-00027	TCZ-270	5RST2T	CM-19B-27UJ	CNO-327	MS-327
C106	100	N1500	10%	#66DI0-77		TCL-100		*		
C107	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C108	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C109	47				DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C110	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C111	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C112	5000				BPD-005	DD-502	BYA10D5	CCD-503	B-250	5HK-D50
C113	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C114	47				DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C115	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C116	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C117	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C118	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C119	22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C120	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C121	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C122	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C123	1000				EF-001	MFT-1000		CCF-102	CT280A	

Admiral Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	
R108A	Switch		78D49-3					Selector
B	3meg							Volume, Right Channel
	1.5meg Tap							
C	3meg							Volume, Left Channel
	1.5meg Tap							
D	Switch							Push-Pull Off-On
R110A	4meg		78B57-5	AB-87			FA46L	Tone, Left Channel
B	4meg			SR-87			RU46L	Tone, Right Channel
C	Shaft			AK-33			SU45	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No	WORKMAN TV PART No	REMARKS			IRC PART No	WORKMAN TV PART No	REMARKS
R111	2.2meg				R129	100K			Note 4
R112	10K 5W	PW3-10K	3G-10K		R130	2.2meg			
R113	33K 1W				R131	220K			
R114	1000Ω				R132	220K			
R115	1500Ω				R133	33Ω			
R116	12K				R134	47K			
R117	5600Ω 1W			Note 1	R135	6800Ω			
R118	100K				R136	6800Ω			
R119	22K				R137	47K			
R120	15K				R138	3.3meg			
R121	27K 2W				R139	470K			
R122	5600Ω 2W				R140	1800Ω			
R123	33K 1W				R141	47K			
R124	68Ω				R142	3.3meg			
R125	12K 10W	PW10-12K	10W-SQ-12K		R143	470K			
R126	750Ω 5W	PW5-750	5W-SQ-750		R144	1800Ω			
R127	33K 2W			Note 2	R145	47K			
R128	56K 1W			Note 3					

Note 1. Run 10 use 5600Ω ½ watt.
Note 2. Run 10 use 1000Ω 2 watt.
Note 3. Run 10 use 33K 1 watt.
Note 4. Not used in Run 10.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	ADMIRAL PART No	REPLACEMENT DATA
K1	AM Det. RF Filter	100mmf, 100mmf, 100K	63A3-2	Aerovox PA-855 Centralab PC-326 Sprague D-4

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Meck PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	
L20	FM Ant.	73B37-7					① Wound on 1meg Resistor.
L21	FM RF	72B228-1					② Not used in Run 10.
L23	FM Osc.	59B282-4					▲Parallel with 1meg Res.
L23	RF Choke (1uh)	73B31-5 ①	BC-581 ▲	4603 ▲	RTC-8515 ▲	T855 ▲	
L24	1st FM IF	72D224-3	FM-256	1463-PC	RTC-9046	T654	
L25	Loopstick	59C256-1	BC-419	705 A		T532	
L26	AM Osc.	59A243-2	BC-393	69-OSC	RTC-8646	T512	
L27	1st AM IF	72D234-4	BC-356	13-PC1	RTC-8641	T614	
L28	2nd FM IF	72D224-2	FM-256	1463-PC	RTC-9046	T654	
L29	2nd AM IF	72D234-5	BC-357	13-PC2	RTC-8642	T615	
L30	Ratio Detector	72D234-1	FM-257	1465-PC	RTC-9053	T659	
L31	RF Choke (2Buh)	73B31-3 ②	TV-192	4626	RTC-8525	T301	
L32	Fil. Choke (1.5uh)	73C2-10	BC-562	4604	RTC-8516	T856	
L33	Fil. Choke (1.5uh)	73C2-15	BC-562	4604	RTC-8516	T856	
L34	Fil. Choke (1.5uh)	73C2-10	BC-562	4604	RTC-8516	T856	

PHONO CARTRIDGE & NEEDLES

"NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY

ITEM No.	REPLACEMENT DATA								NOTES
	ADMIRAL PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M8			13TB		26S	S1-1 * S3-3 *	8TA4-S	N 8TA-S *	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M7	Tuning Capacitor	68C78-3	2 Gang (Ant : 18-325mmf, Osc : 16-102mmf)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (8 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

VHF TUNER PARTS LIST AND DESCRIPTIONS

94E164-10

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •				
V201	RF Amp.	6ER5/GG	V202	Mixer - Osc.	6CG8A (6CG8) *

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27	N750	10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27	N750	10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27	N750	10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27	N750	10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30			#94E164-94						
C206	38		10%		DI-37	DD-370	L10Q27	CCD-270	GP427	10TS-Q27
C207	1000				EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7			#94E164-97		529-7				
C209	100				EF-0001	MFT-100				
C210	5.3-5			#94E164-99						
C211	39		10%		DI-37	DD-370	L10Q27	CCD-270	GP427	10TS-Q27
C212	33				DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C213	5.3-5			#94E164-99						
C214	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C215	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	7.25		5%			DD-7R5	L10V7			10TS-V75
C217	18	N220	10%	#94E164-101				*		10TCH-Q18
C218	1000				EF-001	MFT-1000		CCF-102	CT280A	
C219	1000				EF-001	MFT-1000		CCF-102	CT280A	
C220	1000				EF-001	MFT-1000		CCF-102	CT280A	
C221	1000				EF-001	MFT-1000		CCF-102	CT280A	

Admiral Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R206	1000Ω			
R202	1000Ω				R207	1000Ω			
R203	47Ω				R208	4700Ω			
R204	2700Ω			(4700Ω) *	R209	4700Ω			
R205	220K								

* Alternate Value

COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Trans.	700B169	
L202A	Ant., RF, Mixer & Osc.		
B	"	94D164-52	Channel 2
C	"	94D164-53	Channel 3
D	"	94D164-54	Channel 4
E	"	94D164-55	Channel 5
F	"	94D164-56	Channel 6
G	"	94D164-57	Channel 7
H	"	94D164-58	Channel 8

ITEM No.	USE	ADMIRAL PART No.	NOTES
L202H	Ant., RF, Mixer & Osc.	94D164-59	Channel 9
I	"	94D164-60	Channel 10
J	"	94D164-61	Channel 11
K	"	94D164-62	Channel 12
L	"	94D164-63	Channel 13
L203	Fine Tuning	94D164-68	Core #94D164-73
L204	RF Choke	94D164-67	
L205	Mixer Plate	94D164-69	

MISCELLANEOUS

ITEM No	PART NAME	ADMIRAL PART No.	NOTES
M201	VHF Input Ass'y	94D164-108	
	Turret Assembly	94D164-119	Less Coils
	Collar	94D164-127	Fine Tuning
	Spring	94D164-88	Drum Retaining, Front
	Spring	94D164-91	Drum Retaining, Rear
	Shaft & Cam Ass'y	94D164-121	Fine Tuning
	Arm	94D164-80	Fine Tuning
	Spring	94D164-79	Fine Tuning
	Pivot	94D164-81	Fine Tuning Arm

ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

FOLDER 1

TV PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ADMIRAL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1" length of #26 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	*	98B5-4	6GD1 *			* Horizontal AFC, Dual Selenium, Series Connected Type
M3	1N87 + or 1N87A			1N87 + or 1N87A	1N87 + or 1N87A	+ Video Detector, Crystal Diode, Pigtail

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuner	94E164-10	VHF, Used in Chassis 20C7
	Tuner	94E164-15	VHF, Used in Chassis 20B7
	Tuner	94E164-10	VHF, Used in Chassis 20A7
	Tuner	94E168-1	VHF, Used in Chassis 20A7B
	Tuner	94E164-11	VHF with UHF Provisions, Used in Chassis 20UA7
	Tuner	94E168-2	VHF with UHF Provisions, Used in Chassis 20UA7B
	Tuner	94D653-9	UHF, Used in Chassis 20UA7, 20UA7B
M5	Circuit Breaker *	84A17-1	* Some versions may use a slow-blow fuse for M5. Replace with original type component.

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-In	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8468 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CABINETS

(When Ordering Cabinets Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO.
Cabinet	33E595-1	C24M121, C24UM121
Cabinet	33E595-2	C24M122, C24UM122
Cabinet	35E595-3	C24M123, C24UM123
Cabinet	35E595-11	C24M131, C24UM131
Cabinet	35E595-12	C24M132, C24UM132
Cabinet	35E595-13	C24M133, C24UM133
Cabinet	35E618-2	C24M142, C24UM142
Cabinet	35E618-9	C24M149, C24UM149
Cabinet	35E639-1	C24M171, C24UM171
Cabinet	35E639-2	C24M172, C24UM172
Cabinet	35E639-19	C24M189, C24UM189
Cabinet	35E598-1	CS24M131
Cabinet	35E598-2	CS24M132
Cabinet	35E598-3	CS24M133
Cabinet	35E617-2	CS24M142
Cabinet	35E617-9	CS24M149
Cabinet	35E600-1	L24M151, L24UM151
Cabinet	35E600-2	L24M152, L24UM152
Cabinet	35E600-3	L24M153, L24UM153
Cabinet	35E597-1	L24M161, L24UM161
Cabinet	35E597-2	L24M162, L24UM162
Cabinet	35E597-9	L24M169, L24UM169
Cabinet	35E602-2	LS24M152
Cabinet	35E602-9	LS24M159
Cabinet	35E599-1	LS24M161
Cabinet	35E599-9	LS24M169
Cabinet	35E608-1	STA24M121, STF24M151
Cabinet	35E608-2	STA24M122, STF24M152
Cabinet	35E608-3	STA24M123, STF24M153
Cabinet	35E604-2	STA24M132, STF24M162
Cabinet	35E604-9	STA24M139, STF24M169
Cabinet	35E606-1	STA24M141, STF24M171
Cabinet	35E606-9	STA24M149, STF24M179
Cabinet	34E163-1	T24M110, T24UM110
Cabinet	34E163-5	T24M111, T24UM111
Cabinet	34E163-2	T24M112, T24UM112
Cabinet	34E163-3	T24M113, T24UM113
Cabinet	34E168-2	TS24M120
Cabinet	34E168-3	TS24M122
Cabinet	34E168-4	TS24M123

CABINET PARTS

(When Ordering Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. C24UM121, C24UM122, C24UM123, C24UM131, C24UM132, C24UM133, C24UM142, C24UM149, C24UM171, C24UM172, C24UM189, CS24M131, CS24M132, CS24M133, CS24M142, CS24M149, L24UM151, L24UM152, L24UM153, L24UM161, L24UM162, L24UM169, LS24M152, LS24M159, LS24M161, LS24M169, STA24M120, STA24M121, STA24M122, STA24M123, STA24M132, STA24M139, STA24M141, STA24M149, STF24M151, STF24M152, STF24M153, STF24M162, STF24M169, STF24M171, STF24M179, T24M110, T24UM110, T24M111, T24UM111, T24M112, T24UM112, T24M113, T24UM113, TS24M120, TS24M122, TS24M123
Knob-VHF Channel Selector	20D46-1	X X X

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • USE	TYPE	ITEM No.	RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	6BZ6	V8	Right Channel Audio Output	EL86 (6CW5) ①
V2	2nd Video IF Amp.	6BZ6	V9	Sync Phase Inv. –	
V3	3rd Video IF Amp.	6CB6A		Vert. Mult.	6CG7
V4	Video Output –		V10	Vert. Mult. – Vert. Output	6EM5
	Sound IF Amp.	6AW8A	V11	Horiz. Mult.	6CG7
V5	AGC Keying – Sync Sep. –		V12	Horiz. Output	6DQ6A
	Noise Limiter	[illegible]	V13	Damper	6AU4GTA (6DE4) ①
V6	Audio Detector	6DT6	V14	HV Rectifier	1G3GT/1B3GT (1G3GT) ①
V7	Left Channel Audio Output	EL86 (6CW5) ①	V15	LV Rectifier	5U4GB

① Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V16	23CP4 or 23CP4 or 23HP4 23CP4A *	23CP4 ①	23CP4 ①		23CP4 ② 23CP4 ② 23CP4 ② 23CP4 ②	① Aluminized ② Silver Screen "85" * Used in Chassis 20B7, 20C7 Run 12

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	400	67D15-346	AFH6-08	D0477.5	FP333.95	TMT-3799	TVL8-3698 *	①
B	100	400							
C	10	400							
C2A	60	200	67D15-347	AFH3-84-60	C0636	WP219.8	TMD-2280 TD-50-50	TVL8-3468 *	
B	5	200							
C	50	50							
C3	40	300	67A4-2	PRS1580	BM402S	TC26	TD-40-250	TVA-1511	②
C4	50	350	67D15-226	AFH3-41	A0390	FP137	TMS-1630	TVL-1622	
C5	50	15	67B47-3	PRS265	BBR50-25	TC29	TD-50-25	TVA-1206	
C6	4	16MP	64B13-5	PRS7405	BBR4-150	TCN504		TVANS-1202.2 *	
C7	4	16MP	64B13-5	PRS7405	BBR4-150	TCN504		TVANS-1203.2 *	

① Chassis 20A7, 20A7B, 20UA7, 20UA7B, 20B7 use two section unit, 40mfd@ 350V – 100mfd@ 350V (Pt. #67D15-323).
② Some versions may use 40mfd @ 300V (Pt. #67B4-2).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C9	39	NPO	5%			TCZ-39	CI0Q39C		CNO-439	10TCC-Q39
C10	32	NPO	2%			TCZ-33	CI0Q33C		CNO-433	10TCC-Q33
C11	3-13	N330		#66A38-7						
C12	20	NPO	2.5%			TCZ-20	CI0Q2C	CCTO-200		10TCC-Q20
C13	3-17	NPO		#66A38-11						
C14	9	NPO	2%		NPO-SI 10	TCZ-10	CI0Q1C	CCTO-100	CNO-410	10TCC-V10
C15	1mfd	100V			P288N-1 0		CUB2W1	1DP-5-105	GEM-21	2TM-M1
C16	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C17	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C18	2200				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C19	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C20	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C21	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C22	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C23	560	N330	5%	#65D10-159						
C24	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C25	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C27	3-3	NPO			NPO-DI 3.3	DTZ-3R3	CI0V33C	CCTO-3R3	CNO-533	10TCC-V33
C28	6.8		10%		NPO-SI 6.8	TCZ-6R8	CI0V68C	CCTO-6R8	CNO-568	10TCC-V68
C29	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C30	20	NPO	10%		NPO-DI 20	DTZ-20	CI0Q2C	CCTO-200	CNO-422	10TCC-Q20
C31	22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C32	022	600V	10%		V84C6S22-10		PM6S22	6DP-2-223	GEM-1612	6TM-S22
C33	0.56	1000V			P108N-047		CUB1D47	1BDP-5-473	GEM-10147	10TM-S47
C34	047	1000V			P108N-047		CUB1D47	1BDP-5-473	GEM-10147	10TM-S47
C35	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C36	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C37	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C38	820				DI-820	DD-82I	BYA10T82	CCD-821	B-382	10TS-T82
C39	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C40	4700				BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47
C41	047	400V			P488N-047		CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C42	120	N1500		#65D10-211						
C43	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C45	1000	2000V			HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	30GA-D10
C46	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C47	1000	2000V			HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	30GA-D10
C48	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C50	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C51	4700				BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47
C52	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C53	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	2200				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C55	1000	2000V			HVD-30-1000	DD30-102	HVB20D1	3CCD-222	2HV-210	30GA-D10
C56	.033	1000V	10%		P108ACM-033		DPMS8S33	16DP-5-333	GEM-1613	10TM-S33
C57	.082	200V	10%				DPMS8S82	6DP-4-823		6PS-S82

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C58	.1	400V 10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-4101	4TM-P10
C59	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C60	1000	2000V		HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	30GA-D10
C61	.047	600V		P488N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C62	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C63	1000		10%	DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C64	1000		10%	DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C65	4700		10%	BPD-0047	DD-473	BYA10D47	CCD-472	B-247	5HK-D47
C66	.047	600V		P488N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-D47
C67	3000		10%	1466-0039		1R5D39	CM-20B-392K	MC3462.5	MS-239
C68	820		10%	1469-00082		5RS782	CM-19H-821K	MCB451	MS-382
C69	680		10%	1469-00068		5RS768	CM-19H-681K	MC249	MS-368
C70	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C71	.047	600V		P488N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C72	.03	1600V 5%	#64C2-64						
C73	47	4000V N1500 10%	#65D10-224						
C74	.047	600V		P588N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Admiral Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS–IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200K	½	75D13-109	AB-46	A4T-200K-S	B11-129	U43	Vert. Hold
B	Shaft			AK-33	RS-3/16	8K9	D6-37	
R2	25K	½	75D20-126					Contrast
	12.5K Tap							
R3A	200K	½	75D13-109 ①	AB-46	A4T-200K-S	B11-129	U43	Brightness
B	Shaft			AK-33	RS-3/16	8K9	D6-37	
R4A	5meg	½	75D20-134	TT-87	B4T-5meg-S	B11-141	PTA56L	Balance
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	100K	½	75D20-118	AB-36	B4T-100K-S	B11-138	PTA15L	AGC
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6A	500Ω	½	75D20-100	TT-4	B4T-500-S	B11-103	PTA53L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	1.5meg	½	75D20-104	TT-742	B4T-1.5meg-S	B11-138	TA15SL	Height
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

① Some versions may use 100K (Part #75D13-110).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	8.2meg			
R9	150K			
R10	8200Ω 5W	PW5-8200	5W-SQ-8200	
R11	47K			
R12	1000Ω			
R13	12K			
R14	15K			
R15	150K			
R16	39K			
R17	470Ω			
R18	47Ω			
R19	22K			
R20	220K			
R21	4700Ω			
R22	470Ω			
R23	220K			
R24	68Ω			
R25	470Ω			
R26	330Ω			
R27	6800Ω 2W			
R28	3300Ω			
R29	100Ω			
R30	47K			
R31	33K			
R32	56K			
R33	5600Ω 7W	PW7-5600	7W-SQ-5600	
R34	47K			
R35	120K			
R36	8200Ω			
R37	18K			
R38	47K 1W			
R39	62K			
R40	39K			
R41	270K			
R42	56K			
R43	100K			
R44	560K			
R45	8200Ω			
R46	680Ω			
R47	560K			
R48	33K			
R49	1meg			
R50	1meg			
R51	2200Ω 5W	PW5-200	5W-SQ-200	
R52	1meg			
R53	1meg			
R54	220Ω			
R55	1500 2W			
R56	2.2meg			
R57	3.0meg			
R58	680K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R59	27K			
R60	47K			
R61	56K			
R62	12meg			
R63	8200Ω 1W			
R64	100K			
R65	22K			
R66	4.7meg			
R67	6800Ω 1W			
R68	5600Ω 1W			
R69	2200Ω			
R70	3300Ω			
R71	15K			
R72	15K			
R73	220K			
R74	220K			
R75	470K			
R76	56K			
R77	220K			
R78	1meg			
R79	2.2meg			
R80	100Ω			
R81	39K 1W			
R82	180Ω 1W			
R83	220Ω			
R84	220Ω			
R85	3.8Ω (Cold)			#61A27
R86	100K			
R87	8200Ω			
R88	470K			
R89	4.7meg			
R90	22K 3W	PW3-22K	3G-22K	
R91	10K			
R92	1200Ω			
R93	47K			
R94	82K			
R95	15K			
R96	56K			
R97	100Ω			
R98	1meg			
R99	12K 3W	PW3-12K	3G-12K	
R100	180K			
R101	220K			
R102	270K			
R103	2.7meg			
R104	1.5Ω			
R105	470K			
R106	56K			
R107	470Ω 3W	PW3-470	5W-SQ-470	
R108	5600Ω 7W	PW10-5600	10W-SQ-5600	Note 1

Admiral Part Number.

Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	RF Choke	73B37-6					① Includes C27 and C28.
L2	41.25MC Trap	73B37-4					② Wound on 2700Ω Res.
L3	39.75MC Trap	73B37-5					③ Includes Assembly.
L4	47.25MC Trap	72C132-44					④ Wound on 12K Resistor.
L5	1st Video IF	72C132-43					† Parallel with 2700Ω Resistor.
L6	2nd Video IF	72C132-39					* Parallel with 12K Resistor.
L7	3rd Video IF	72C132-39					
L8	4th Video IF	72B191-3 ①					
L9	RF Choke (12uh)	73B31-4	BC-566	4823	RTC-8532	T881	
L10	Peaking (400uh)	73C5-41 ②	TV-302 †	6136 †	RTC-8579 †	T332 †	
L11	RF Choke (28uh)	73B31-3	TV-192	4036	RTC-8525	T301	
L12A	4.5MC Trap	73C185-2 ③				T277	
	In 1st Sound IF						
L13	Peaking (325uh)	73C5-30	TV-188	6174	RTC-8592	T324	
L14	Peaking (190uh)	73C5-40 ④	TV-197 *	6154 *	RTC-8587 *	T312 *	
L15	2nd Sound IF	72C208-1					
L16	Quadrature	73C132-37					
L17	Fil. Choke (1.4uh)	73B37-2	BC-562	4804	RTC-8516	T856	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L18	Horiz. Stabilizer	94D17-7	TV-163	6210	RC110	RTC-8623	HS-5	WLC-25	T103

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC-RES	INDUCTANCE (0 CURRENT 1000 ^\)	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L19	.260A	50Ω	1 Hy.	74C18-36 ①	C-2996 ②	C-2342	26C44 ②	C-26X	

① Part #74B18-36 used in Chassis 20C7 (Run 12) and 20B7 (Run 12). ② Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	SEC 1	SEC 2	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ① 1.85A	560 VCT ② 260A DC	5V ③ 3A	80D65-1				R-80A ①	① Phase and parallel 6A and 5A, 6.3V windings.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ② 11A								

① Less rear cover and centering device.
② Requires new rear cover and centering device.
③ Use original yoke damping network if necessary.
④ Used in Runs 10 and 11.
⑤ Used in Run 12.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	79D43-20					A-140X	
T3	Yoke (Horiz. 18MH) ① (HV) (Vert. 14.2MH) ②	94D87-2C ①			TY-27A ② ③	Y-52	T-60-1	
	Rear Cover and Centering Device	94C152-1						
T4	Horiz. Output	79E77-9 ④	HVO-165		HO-318		D-194	
	Alt. Horiz. Output	79B77-9 ⑤						
	Horiz. Output	79E77-13 ④						
	Alt. Horiz. Output	79B77-13 ⑤						

① Less rear cover and centering device.
② Requires new rear cover and centering device.
③ Use original yoke damping network if necessary.
④ Used in Runs 10 and 11.
⑤ Used in Run 12.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	2200Ω	3.4Ω	79D33-32	A-2905 ①	A-3825 ①	24363 ①	S-54X	① Drill new mounting hole(s).
T6	2500Ω	3.4Ω	79D33-32	A-2905 ①	A-3825 ①	24363 ①	S-54X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	78C138-7 ①	69A2	① Used in Models STA24M12I, 122, 123, 132, 139, 141, 149, 5TF24M5I, 152, 153, 162, 169, 171, 179.
SP2	3½"	PM	3-4Ω	78D48-7 ①	3AI5TZ4	
SP3	3½"	PM	3-4Ω	78D48-7 ①	3AI5TZ4	② May be used in some versions of above Models.
SP4	6" x 9"	PM	3-4Ω	78C138-7 ①	69A2	③ Used in Models L24M5I, 152, 153, 161, 162, 169.
SP5	3½"	PM	3-4Ω	78D48-7 ①	3AI5TZ4	④ Used in Models L24M5I, 152, 153, 161, 162, 169, L24UM5I, 153, 163, 161, 162, 169.
SP6	3½"	PM	3-4Ω	78D48-7 ①	3AI5TZ4	
	3½"	PM		78B148-7 ②		⑤ Used in Models C24M12I, 122, 123, 131, 132, 133, 142, 149, C24UM12I, 122, 123, 131, 132, 133, 142, 149.
	6"	PM			②	
	5"	PM	6-8Ω	78B139-12 ③ ④	5AI2E.4	⑥ Used in Models C24M17I, 172, 189, C24UM17I, 172, 189.
	6"	PM		78C134-7 ④ ⑤		⑦ Used in Models C324M12I, 132, 133, 142, 149.
	6"	PM		78C134-8 ⑤		⑧ Used in Models T324M20, 122, 123.
	3" x 5"	PM		78B135-4 ⑥ ⑦		⑨ Used in Models T24UM10, 111, 112, 113.
	2 1/4" x 6 1/4"	PM		78C174-1 ⑧		T24UM10, 111, 112, 113.

ADMIRAL CHASSIS 20A7, 20A7B, 20B7, 20C7, 20UA7, 20UA7B

FOLDER 1

AM TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

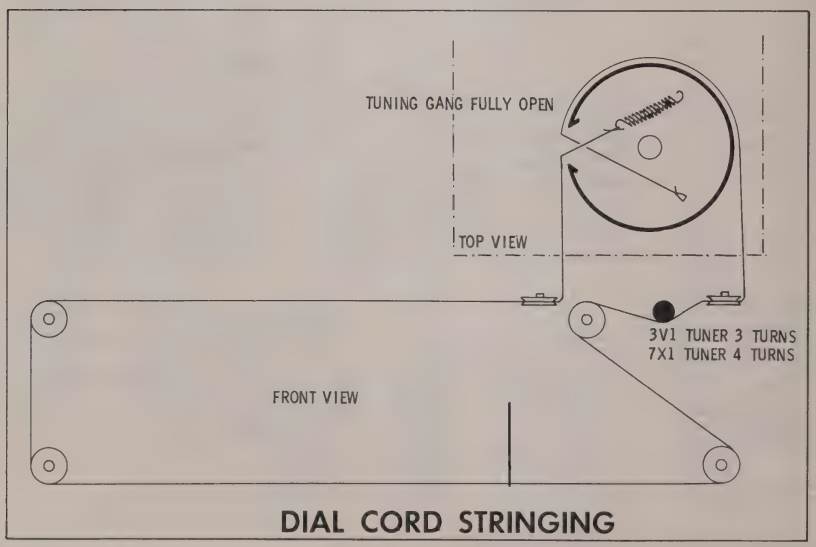
AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM)	AM Tuning gang fully open	Across Voice Coil	A13, A14, A15, A16	Adjust for maximum output.
2.	Loop	1620KC	"	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	535KC	Tuning gang fully closed	"	A18	"
4.	"	1400KC	1400KC Signal	"	A19	"

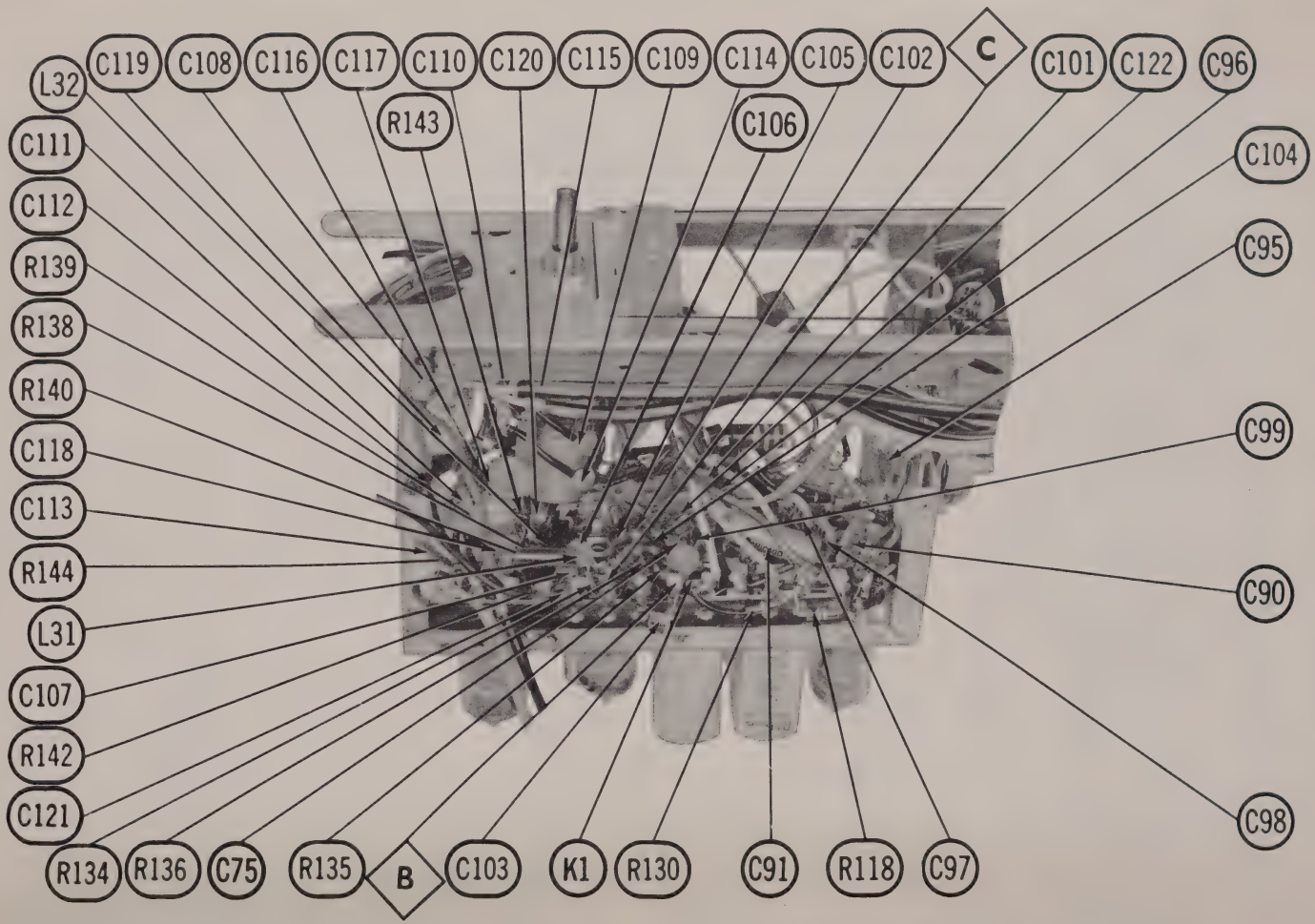
RESISTANCE MEASUREMENTS FM—AM TUNER 7X1

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V17	6BA6	2.2meg	0Ω	0Ω	.1Ω	▪†10K	▪†33K	0Ω		
V18	6DT8	▪†1800Ω	.1Ω	1500Ω	.1Ω	0Ω	▪†6400Ω	12K	.1Ω	0Ω
V19	6BE6	22K	.1Ω	.1Ω	0Ω	▫†15K	▫†27K	▫2.7meg		
V20	6BA6	▪20Ω ▫2.6meg	0Ω	.1Ω	0Ω	▪†6400Ω	▪†34K	68Ω		
V21	6AU6A	540K	0Ω	0Ω	.1Ω	▪†34K ▫†INF	▪†50K ▫†INF	0Ω		
V22	6AL5	6800Ω	6800Ω	0Ω	.1Ω	INF	0Ω	INF		
V23	12AX7A	†520K	3.3meg	1800Ω	0Ω	0Ω	†520K	3.3meg	1800Ω	.1Ω

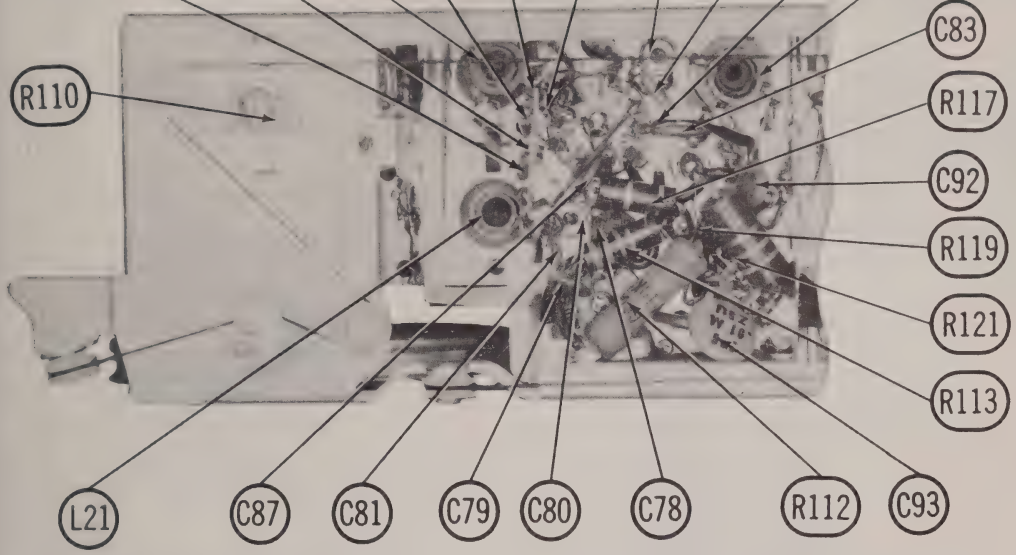
▪ MEASURED IN "FM" POSITION. ▫ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V15.



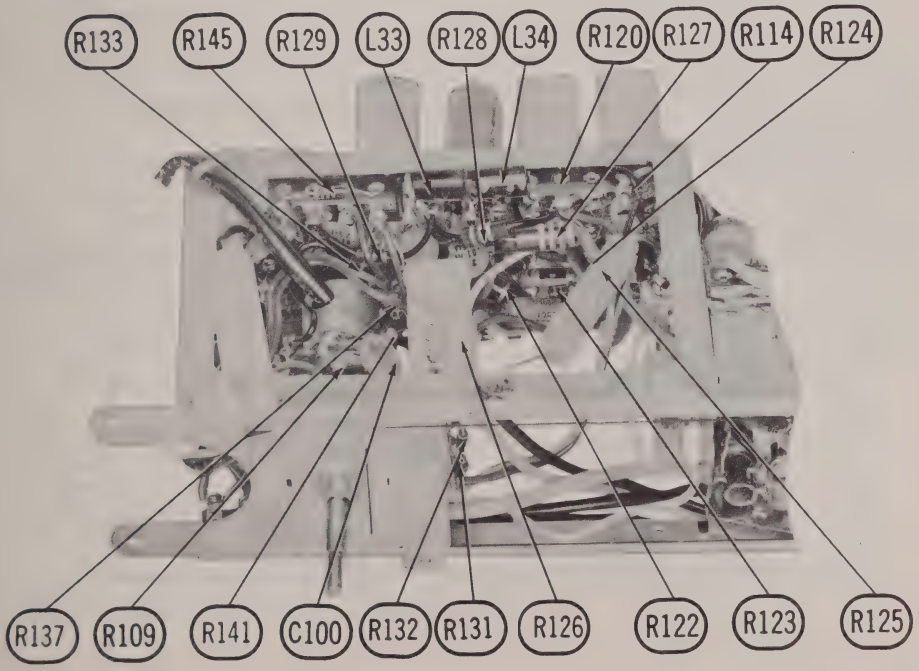
DIAL CORD STRINGING



FM-AM TUNER CHASSIS 7X1 (IF SECTION)



FM-AM TUNER CHASSIS 7X1 (FM RF-OSC., AM CONV. SECTION)



FM-AM TUNER CHASSIS 7X1 (IF SECTION)

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point Ⓓ . Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

FIG 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

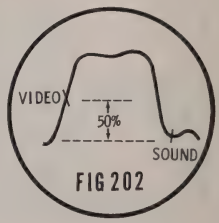
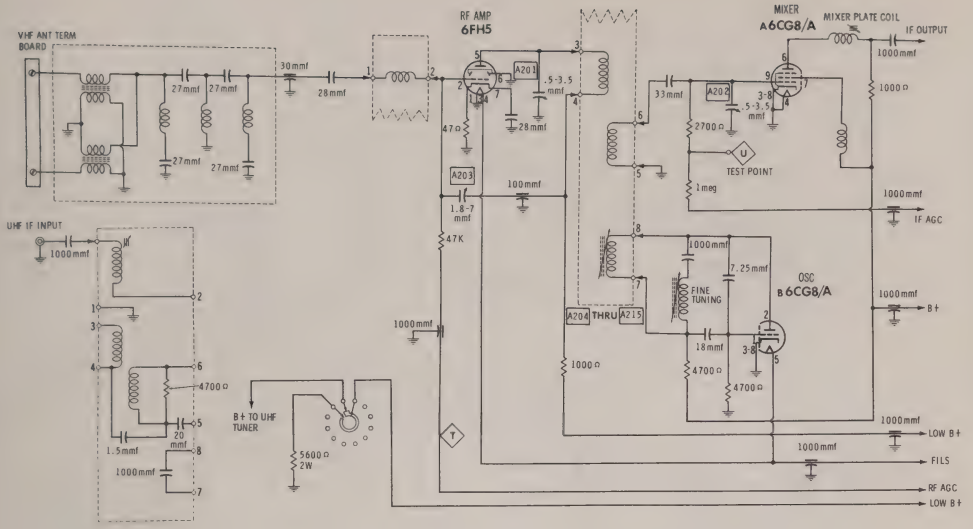


FIG 202



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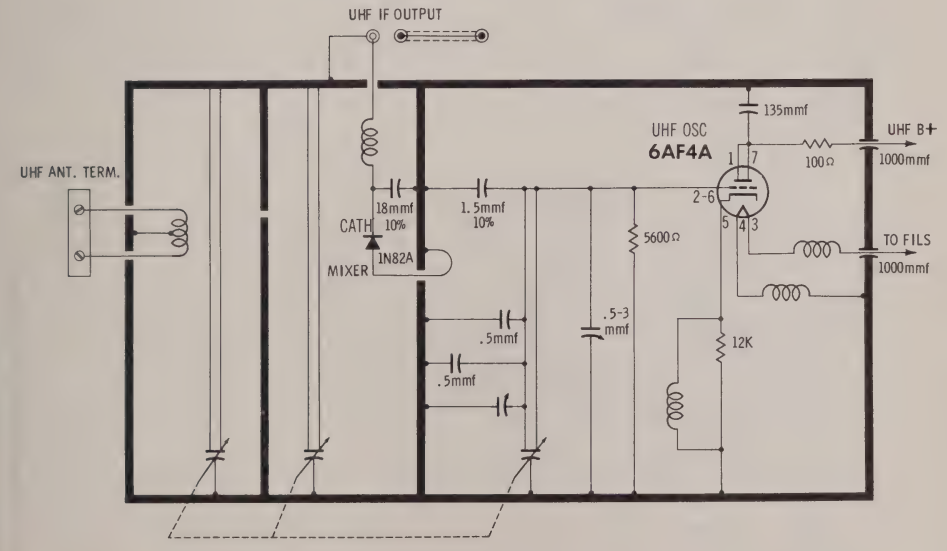
VHF TUNER WITH UHF PROVISIONS 94E164-11



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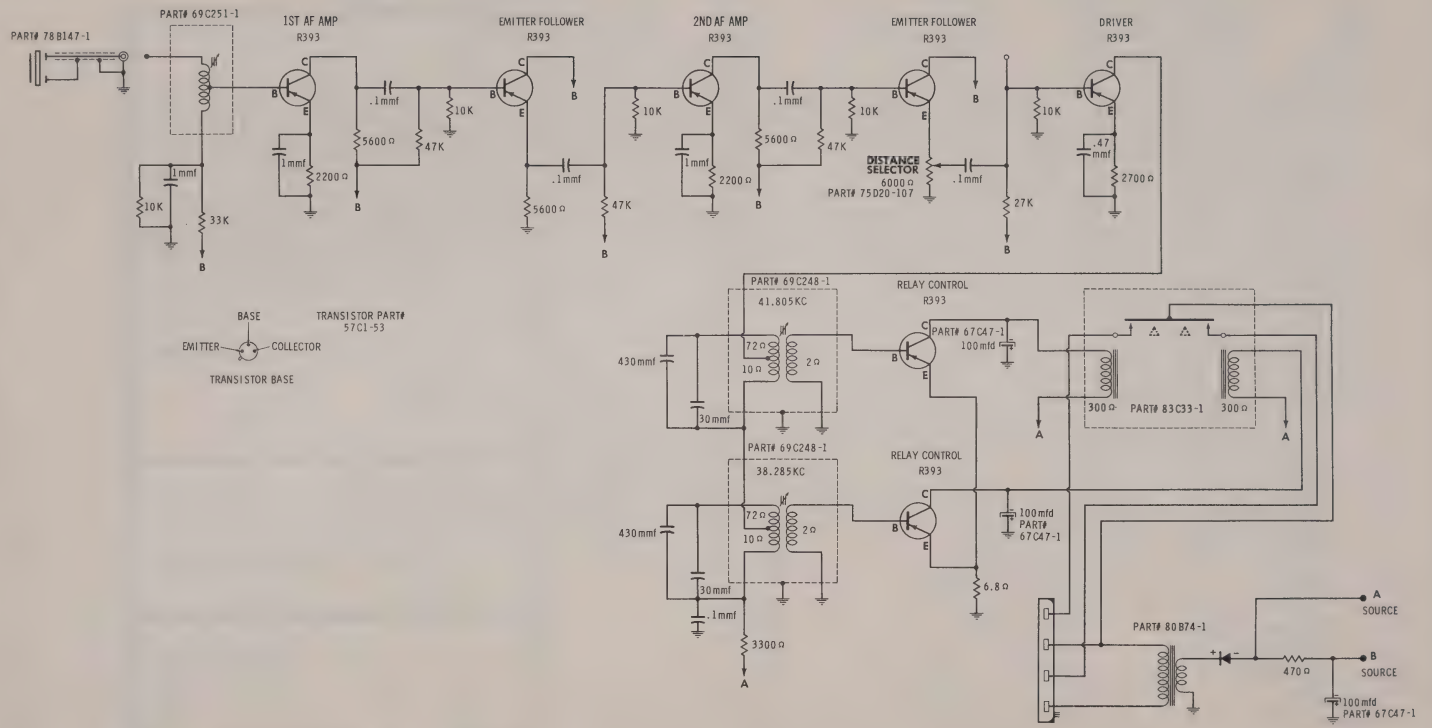
UHF TUNER 94D162-9



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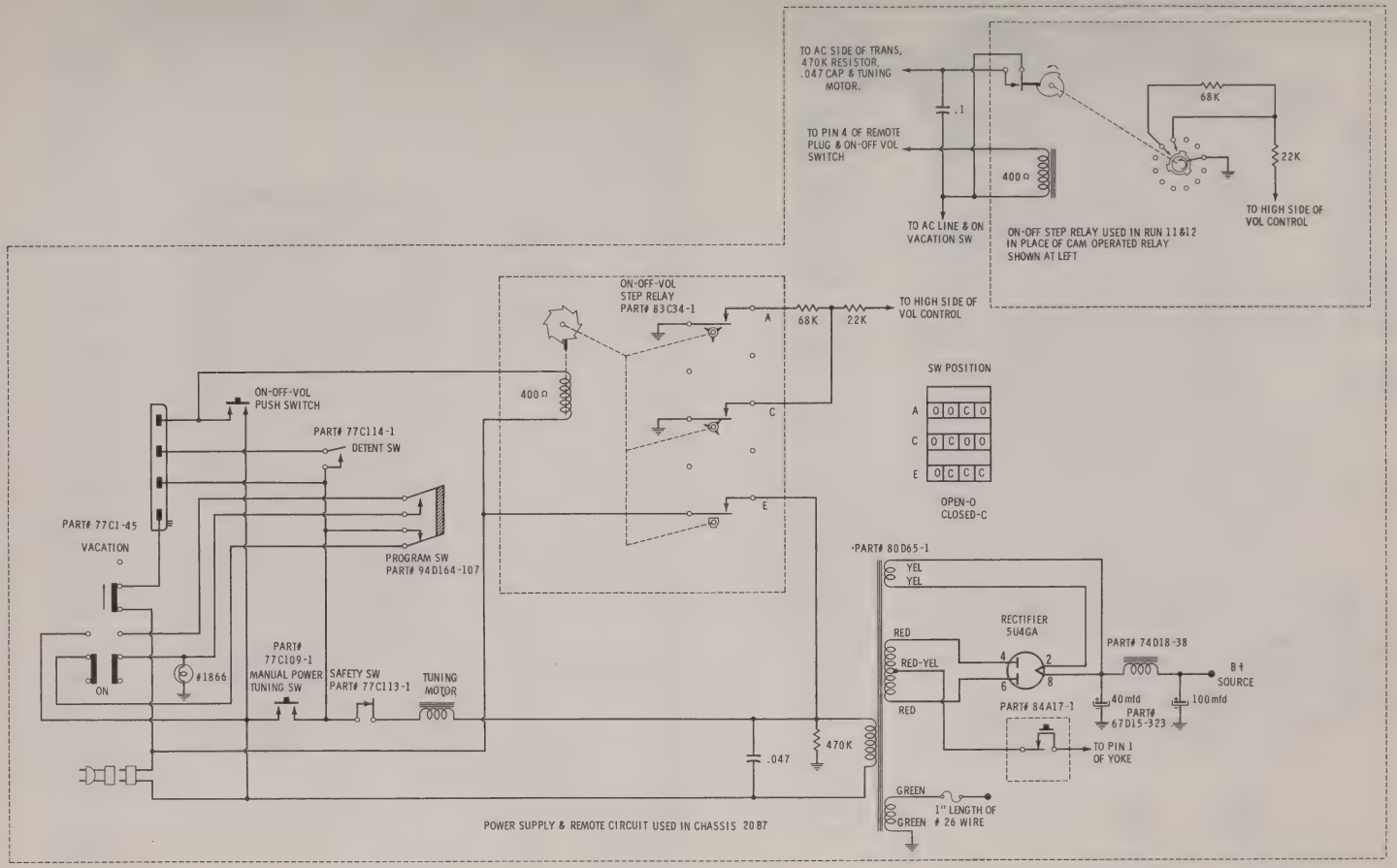
REMOTE CONTROL RECEIVER 7E2A



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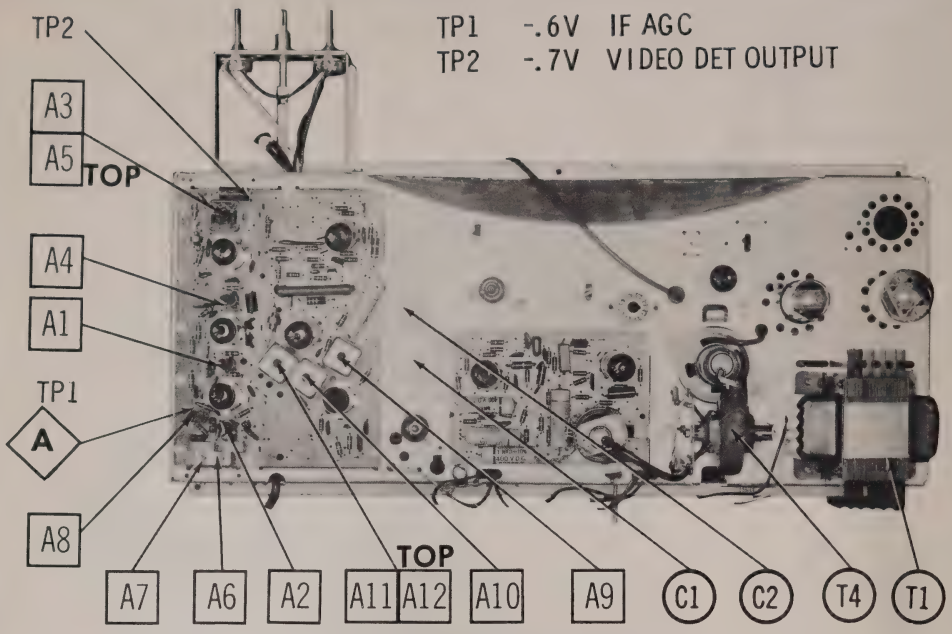
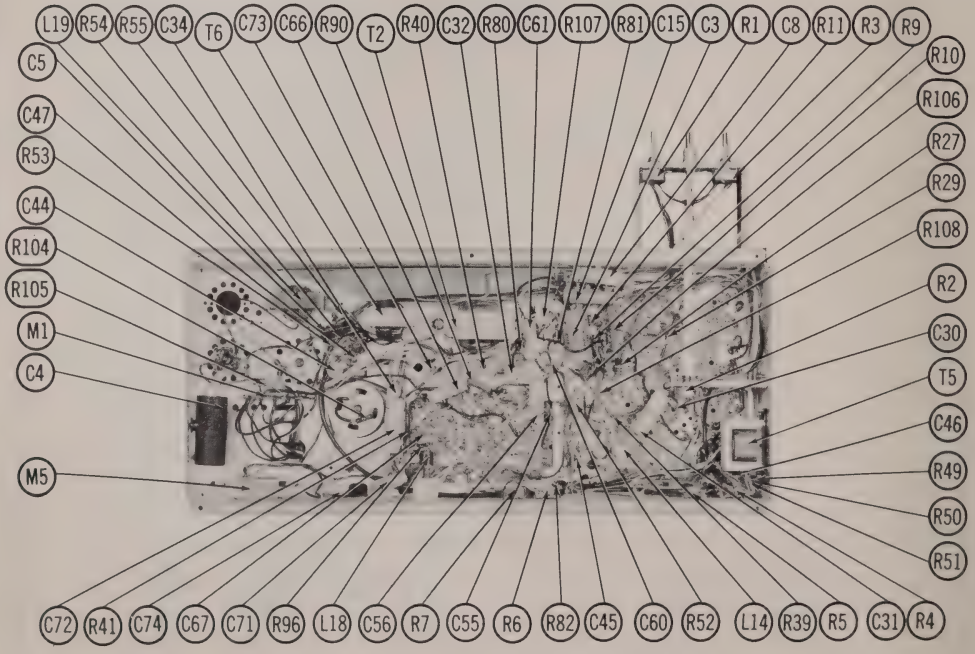
POWER SUPPLY - REMOTE CONTROL CIRCUITS FOR TV CHASSIS 20B7



TV CHASSIS-TOP VIEW



TV CHASSIS - BOTTOM VIEW

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.1Ω	▲540Ω	▲540Ω	0Ω		
V2	6BZ6	110K	120K	.1Ω	0Ω	†520Ω	†520Ω	120K		
V3	6CB6A	.1Ω	330Ω	.1Ω	0Ω	†7300Ω	†7300Ω	0Ω		
V4	6AW8A	0Ω	100K	* 40K	0Ω	.1Ω	0Ω	3400Ω	*12K	†4700Ω
V5	6BU8	* 0Ω	†8200Ω	2meg	0Ω	.1Ω	● 30K	†725K	†30K	†12meg
V6	6DT6	17Ω	680Ω	.1Ω	0Ω	†615K	* 8200Ω	560K		
V7	EL86	NC	500K	¶5000Ω ●¶ INF	.1Ω	0Ω	NC	†355Ω	NC	†250Ω
V8	EL86	NC	1meg	150Ω	.1Ω	0Ω	NC	*▪105Ω	NC	▪* 0Ω
V9	6CG7	● †1meg	220K	● 100K	.1Ω	0Ω	* 12K	*4.7meg	3300Ω	0Ω
V10	6EM5	†620Ω	NC	2.2meg	0Ω	.1Ω	NC	●350Ω	NC	†810Ω
V11	6CG7	†10K	1meg	1200Ω	0Ω	.1Ω	†82K	47K	1200Ω	0Ω
V12	6DQ6A	NC	0Ω	NC	†12K	1meg	NC	.1Ω	0Ω	TOP CAP †15Ω
V13	6AU4GTA	NC	NC	700K	NC	†50Ω	NC	.1Ω	0Ω	
V14	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †450Ω
V15	5U4GB	NC	¶25K	NC	26Ω	NC	29Ω	NC	¶25K	
V16	23GP4	.1Ω	39K	†3.1meg	†200K	NC	NC	●110K	0Ω	
V201	6ER5 GG	47Ω	3.5meg	0Ω	.1Ω	†9200Ω	0Ω	47Ω		
V202	6CG8A	4700Ω	*5700Ω	0Ω	0Ω	.1Ω	*2000Ω	*1000Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

ALL MEASUREMENTS MADE IN "TV" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15.
‡ MEASURED FROM PIN 3 OF V13.
* MEASURED FROM PIN 3 OF V7. NC NO CONNECTION
▲ MEASURED FROM PIN 2 OF V2.
▪ MEASURED IN "FM" POSITION.
▪ MEASURED IN "AM" POSITION.

TV RESISTANCE MEASUREMENTS

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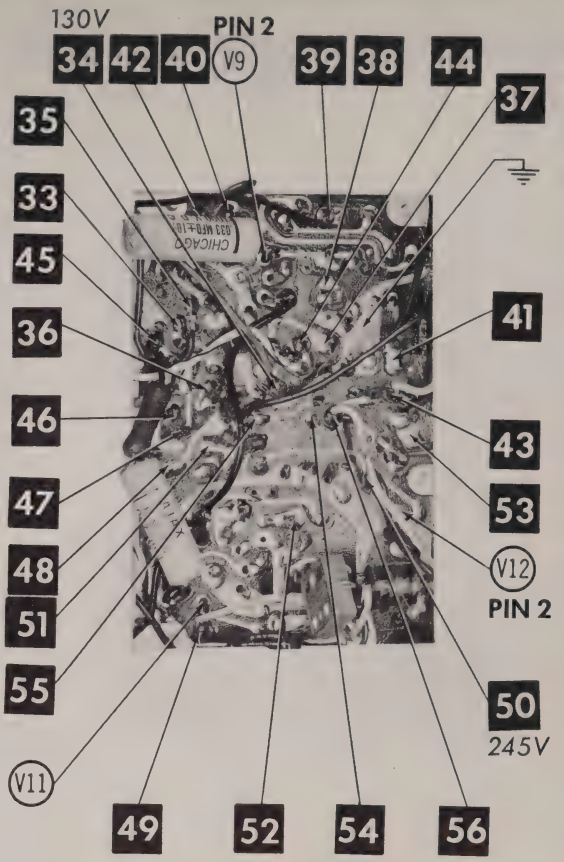
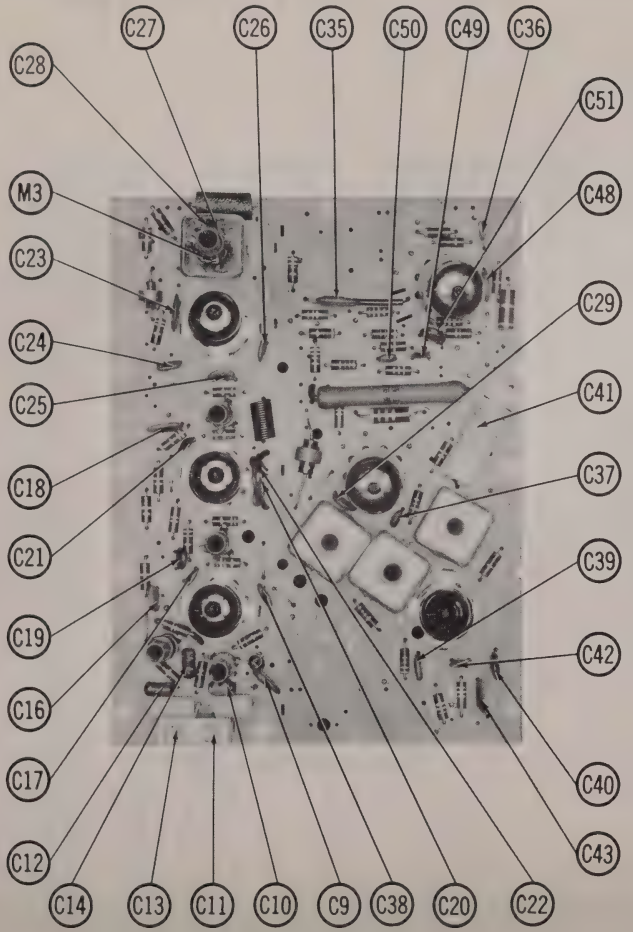
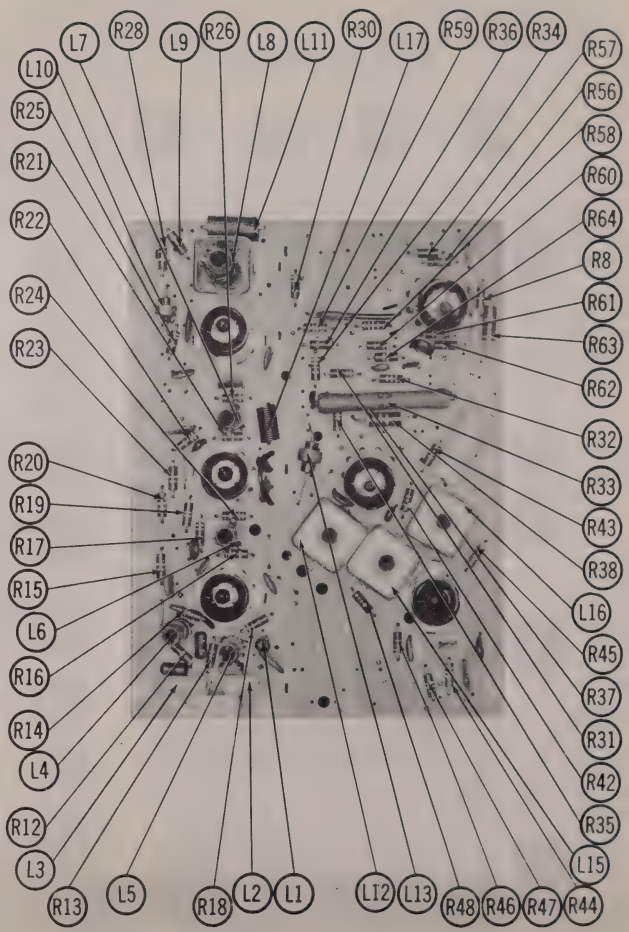
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



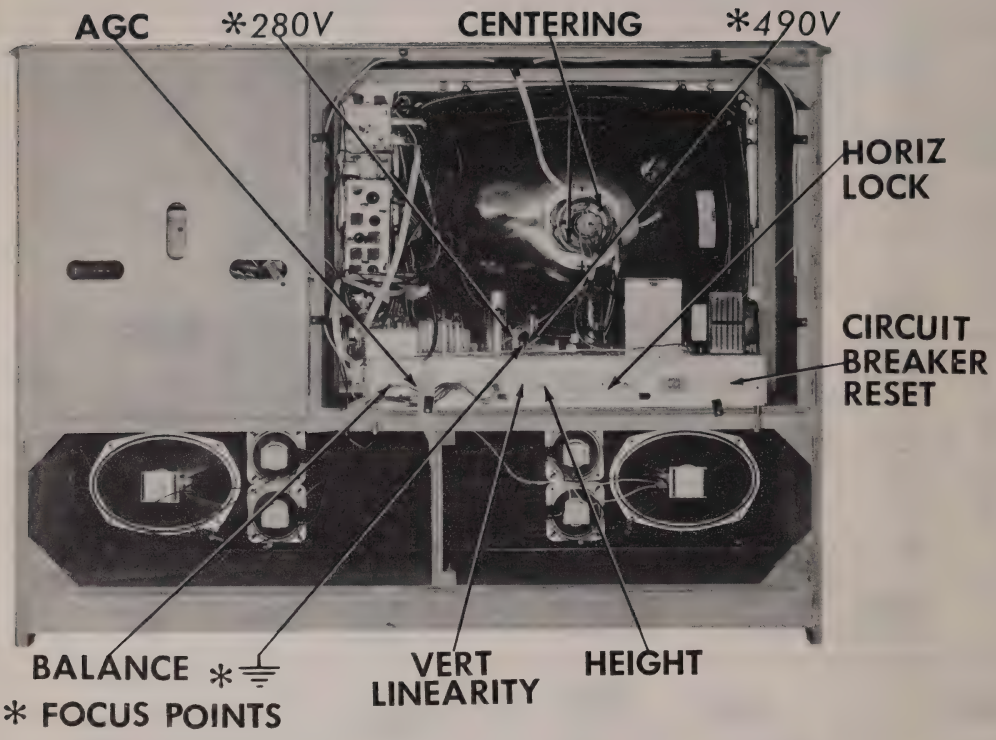
PRINTED BOARD
VERT.-HORIZ. MULT., HORIZ. OUTPUT, SYNC PHASE INVERTER, HORIZ. AFC



MAIN PRINTED BOARD
CAPACITOR & MISC IDENT.



MAIN PRINTED BOARD
RESISTOR & INDUCTOR IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Lock clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Lock slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL

1. Remove rear cover.
2. Disconnect speaker(s), 2 phono plugs (on combination model), and antenna.
3. Remove 3 chassis bolts.
4. Remove 4 screws (inside) holding front escutcheon to cabinet.
5. Remove chassis, escutcheon, and picture tube (as one unit) out front.

PHOTOFACT® Folder

SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

MODEL 19C61 (CH. 361)

SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SETCHELL-CARLSON MODELS
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SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

MODEL 19C61 (CH. 361)

TRADE NAME	Setchell-Carlson Models TL61, 19C61, 19T61, 61C (Ch. 361)
MANUFACTURER	Setchell-Carlson Inc., New Brighton, Minnesota
TYPE SET	Television Receiver
TUBES	VHF - Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 145 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws holding the trim strip at the bottom edge of the safety glass. Tilt glass out and remove.

FUSE AND FUSE DEVICE

3 Amp. (AC Line) - M3 in Photo "Chassis - Top View"
2Ω 5W Resistor (AC Line) - R85 in Photo "Chassis - Bottom View - Resistor & Inductor Ident."
Fuse Wire (Fil.) - M4 in Photo "Chassis Bottom View - Capacitor & Misc. Ident."

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

No provision is made to vary the AGC on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Hold control is used to synchronize the picture horizontally.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (All) located at top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PICTURE TUBE SAVER

To extend life of weak picture tube, a jumper wire across R84 may be used to increase picture tube filament voltage to 8 volts.

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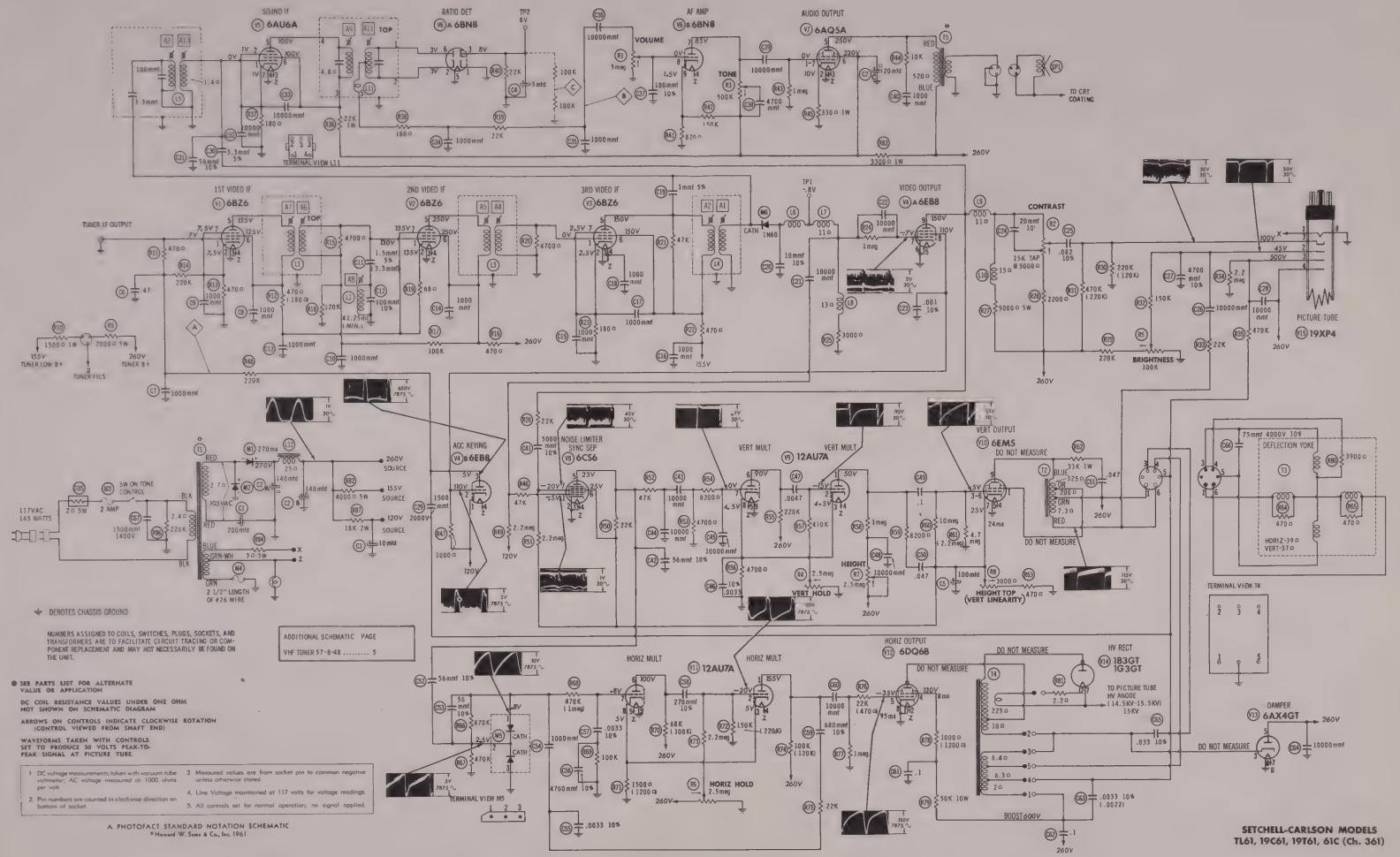
KA656

SET 532 FOLDER 2


SOUND IF
V5 6AU6A
RATIO DET
V6 A 6BN8
AF AMP
V6 B 6BN8
AUDIO OUTPUT
V7 6AQ5A
VOLUME
TONE
TO CRT COATING
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 6BZ6
3RD VIDEO IF
V3 6BZ6
TUNER IF OUTPUT
VIDEO OUTPUT
V4 A 6EB8
CONTRAST
PICTURE TUBE
19XP4
BRIGHTNESS
ACC KEYING
V4 B 6EB8
NOISE LIMITER
SYNC SEP
V8 6CS6
VERT MULT
V9 12AU7A
VERT MULT
VERT OUTPUT
V10 6EM5
DO NOT MEASURE
DEFLECTION YOKE
HORIZ-39Ω
VERT-37Ω
TERMINAL VIEW T4
HORIZ MULT
V11 12AU7A
HORIZ MULT
HORIZ OUTPUT
V12 6DQ6B
HV RECT
V14 1B3GT
1G3GT
TO PICTURE TUBE HV ANODE (14.5KV-15.5KV) 15KV
DAMPER
V13 6AX4GT
BOOST 600V
HORIZ HOLD
VERT HOLD
HEIGHT
HEIGHT TOP (VERT LINEARITY)
TERMINAL VIEW T1
TERMINAL VIEW L11
TERMINAL VIEW M5
TUNER LOW B+
TUNER B+
TUNER FILS
117VAC 145 WATTS
SW ON TONE CONTROL
2 AMP
105VAC
260V SOURCE
155V SOURCE
120V SOURCE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
ADDITIONAL SCHEMATIC PAGE
VHF TUNER 57-8-48 5
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
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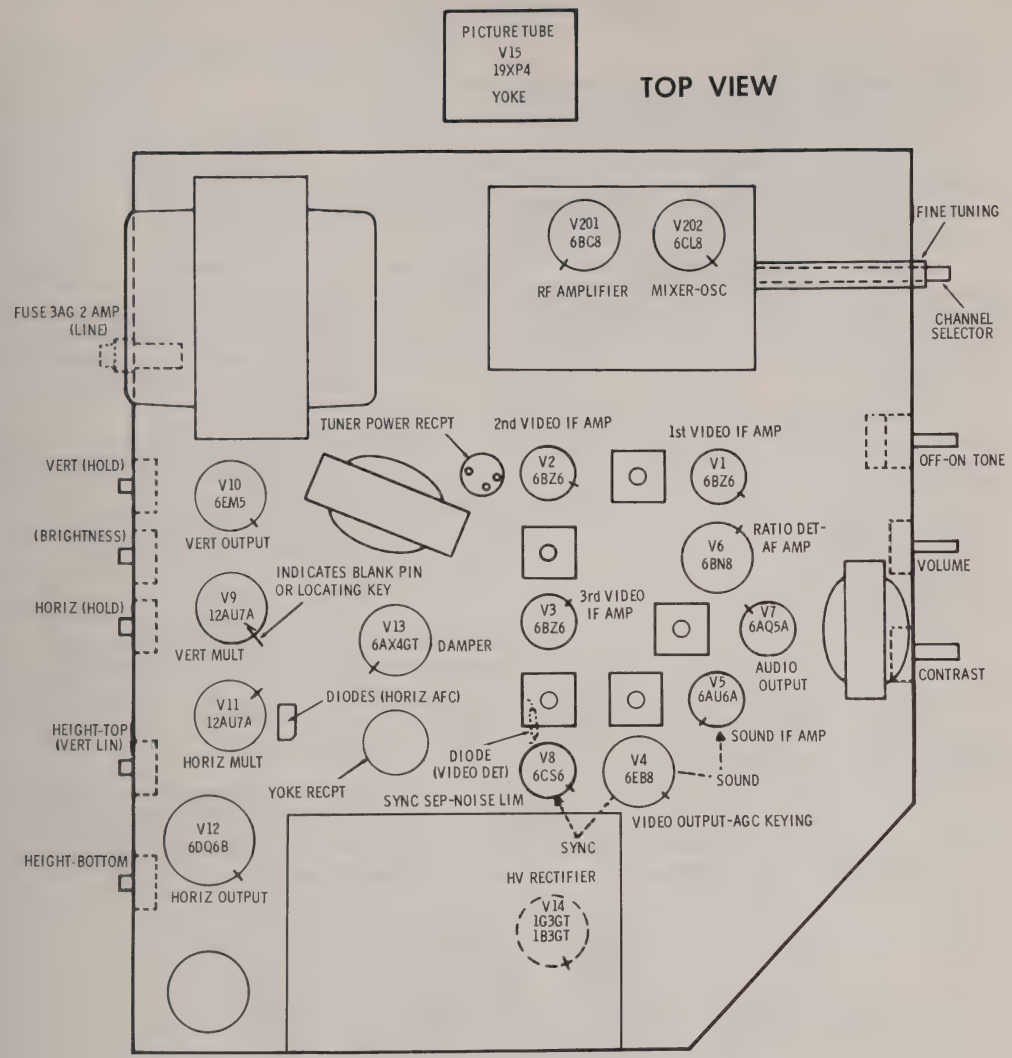
SETCHELL-CARLSON MODELS
TL61, 19C61, 19T61, 61C (Ch. 361)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Fuse (Line), Fuse (Fil.), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rectifiers (B+)
Vert. off freq. V9
Horiz. off freq. Diodes (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8
No vert. or horiz. sync V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 1 (grid) of 3rd Video IF Amp. Low side to chassis.	44MC (10MC Swp.)	45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to TP-1. Low side to chassis.	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A3 to place 47.25MC marker in trap notch.
2.	High side thru .001mfd to pin 1 (grid) of 2nd Video IF Amp. Low side to chassis.	"	45.75MC	"	"	A4, A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
3.	High side thru .001mfd to pin 1 (grid) of 1st Video IF Amp. Low side to chassis.	"	41.25MC 45.75MC	"	"	A6, A7, A8	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Adjust A8 to place 41.25MC marker in trap notch.
4.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Repeat steps 1 thru 4 if necessary.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point TP-2 to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to TP-1. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to TP-2. Common to chassis.	A9, A10	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (B). Common to point (C).	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

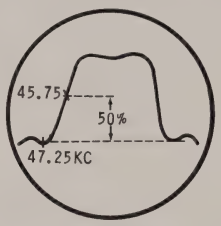


FIG. 1

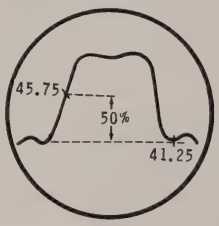


FIG. 2

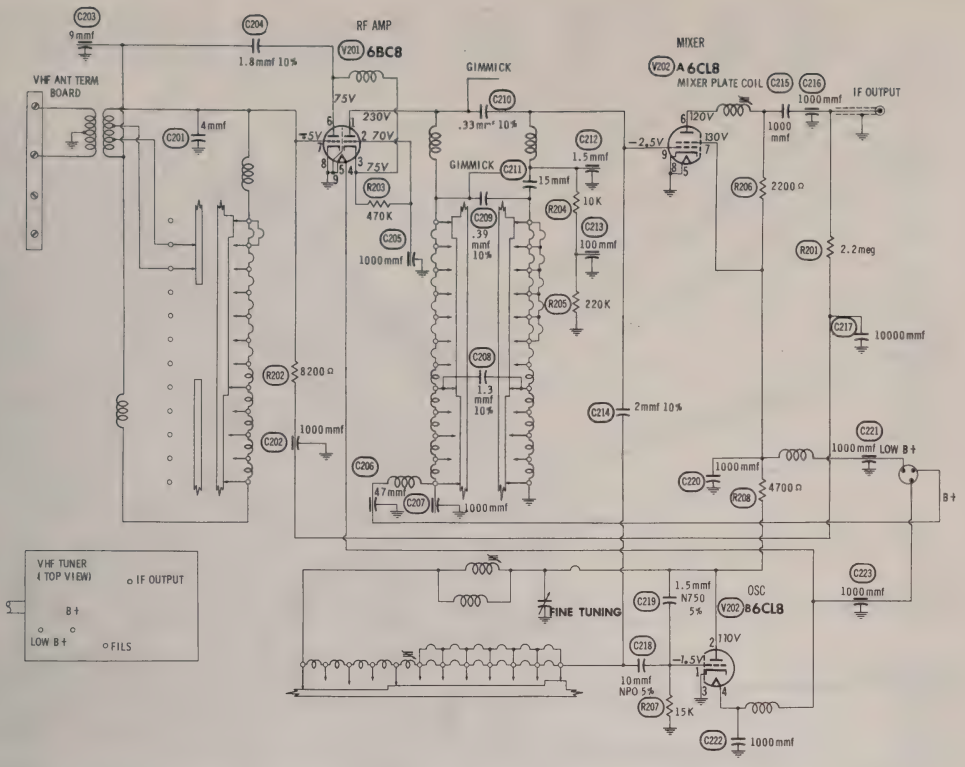
VHF TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range. One slug for high band adjustment is located at 2 o'clock, and should be adjusted first.
The low band adjustment is located at 6 o'clock. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



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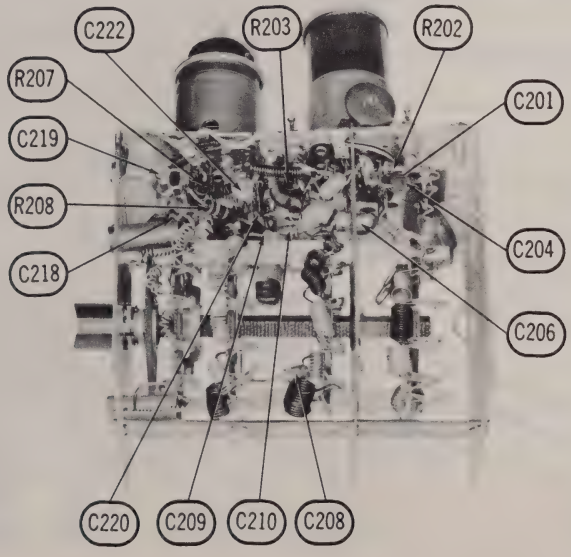
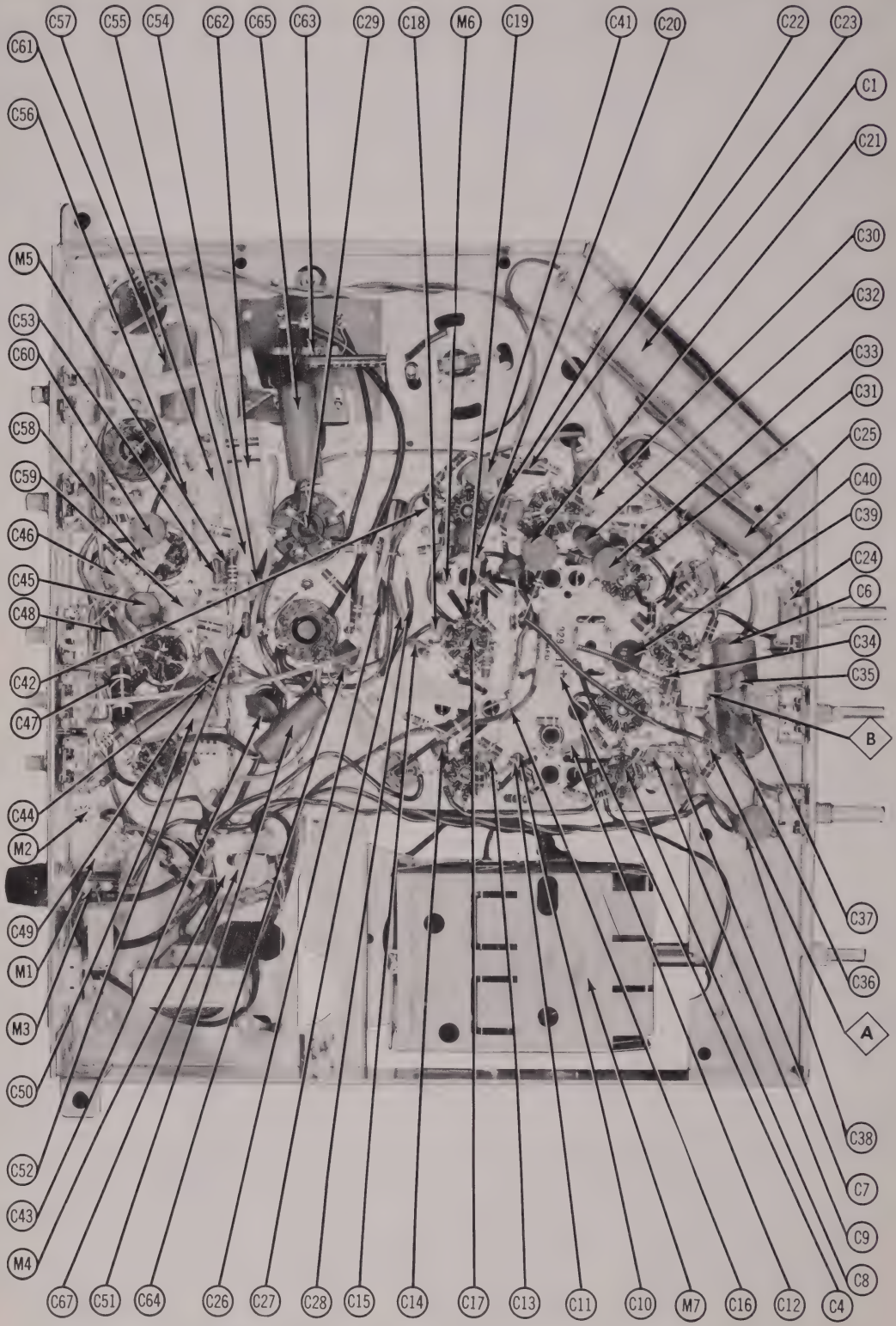
VHF TUNER 57-B-48



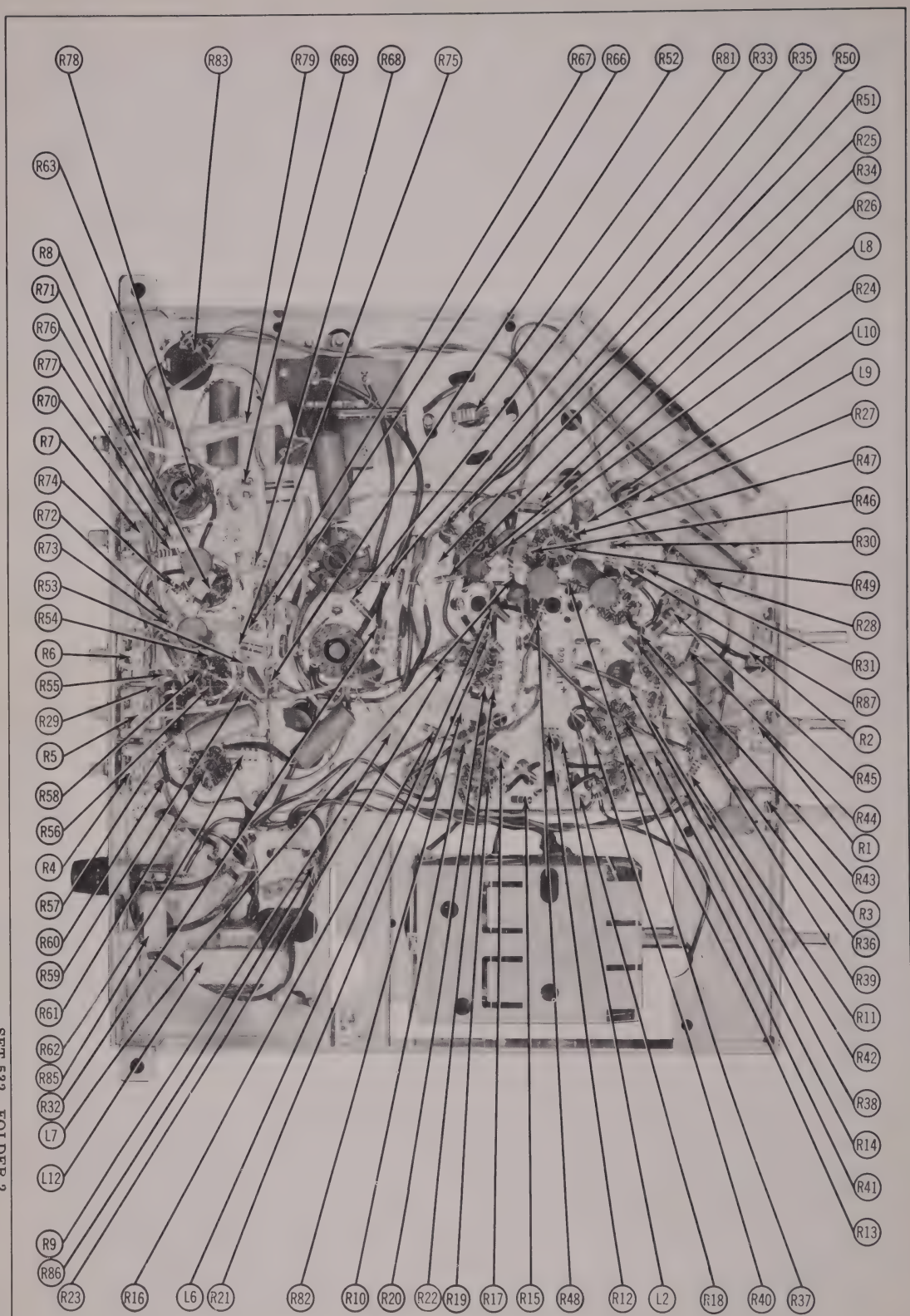
VHF TUNER 57-B-48 - RIGHT SIDE

SET 532 FOLDER 2



CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

SETCHELL-CARLSON MODELS
T161, 19C61, 19T61, 61C (Ch. 361)



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	* GENERAL ELECTRIC * RAYTHEON * SYLVANIA * USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6BZ6
V4	Video Output - AGC Keying	6EB8
V5	Sound IF Amp.	6AU6A
V6	Ratio Det. - AF Amp.	6BN8
V7	Audio Output	6AQ5A
V8	Sync Sep. - Noise Limiter	6CS6
V9	Vert. Mult.	12AU7A
V10	Vert. Output	6EM5
V11	Horiz. Mult.	12AU7A
V12	Horiz. Output	6DQ6B
V13	Damper	6AX4GT
V14	HV Rectifier	1G3GT/B3GT

PICTURE TUBE

ITEM No	REPLACEMENT DATA: Setchell-Carlson PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	19XP4		19XP4 ①		19XP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	200	200		PRI-075	BR30035	WS343	TD-200-300	TVA-1480	
C2A	140	350		AFH3-29-98	D0046	WP332.44		TVL8-3648 *	
B	140	350			BR30035				
C	20	350							
C3	10	450		PRS1T30	BR1048	TC72	TD-10-450	TVA-1705	
C4	5	50		PRS1S10	BR4S-50	TC250	TD-5-50	TVA-1309	
C5	100	50		PRS1S60	BR1005	TC350I	TD-100-50	TVA-1310	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EUMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	47	200V			P288N-47		2DP-5-474	GEM-3047	2TM-P47	
C7	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C8	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C9	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C10	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C11	1.5		5%	(3.3) †	NPO-SL1.5	TCZ-1R5	C10Y15C	CCTO-2R2	CNO-515	10TCC-Y15
C12	100		10%		1469-0001	TCZ-100	22HS71	CM-19B-101K	MCB135	MS-31
C13	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C14	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C15	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C16	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C17	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C18	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C19	1		5%		NPO-S1.0	TCZ-1			CNO-S10	10TCC-V10
C20	10		10%		NPO-S110	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C21	10000			(.0047) †	BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C22	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C23	001	400V	10%		V84C60I-10%	DD-103	PMSDI	6DP-1-102	GP210	6TM-D10
C24	20		10%		1469-00003	TCZ-20	22HS23	CM-19B-200K	CNO-422	10TCC-Q20
C25	082	400V	10%				DPMS8382	6DP-4-083		6PS-S82
C26	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C27	4700		10%		DI-4700		PMSD47	CCD-472	JL-347	10TS-D47
C28	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-210	5HK-E10
C29	2500	2000V			HVD-20-1500	D030-152	HVB20DI5	3CCD-152	2HV-215	30GA-D15
C30	3.3		5%		NPO-S1 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-V33
C31	56		10%		1469-000056	TCZ-56	22HSQ56	CM-19B-560K	CNO-456	MS-456
C32	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C33	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C34	10000				BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C35	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C36	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-D10
C37	100		10%		1469-0001	TCZ-100	22HS71	CM-19B-101K	MCB235	MS-31
C38	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C39	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C40	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C41	5000		10%		DI-5000		PMSD5	CCD-582	JL-250	10TS-D50
C42	56		10%		1469-000056	TCZ-56	22HSQ56	CM-19B-560K	CNO-456	MS-456
C43	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C44	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C45	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C46	.0033	600V	10%		V84CD33-10%		PMSD33	6DP-1-332	JL-333	6TM-D33
C47	.0047	400V			P488N-0047	DE-472	CUB6D47	6DP-1-472	GEM-5247	6TM-D47
C48	1000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C49	.1	400V			P488N-1	DF-104	CUB4PI	4DP-3-104	GEM-401	4TM-P10
C50	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C51	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C52	56		10%		1469-000056	TCZ-56	22HSQ56	CM-19B-560K	CNO-456	MS-456
C53	56		10%		1469-000056	TCZ-56	22HSQ56	CM-19B-560K	CNO-456	MS-456
C54	1000				BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C55	.0033	600V	10%		V84CD33-10%		PMSD33	6DP-1-332	JL-333	6TM-D33
C56	4700		10%		DI-4700		PMSD47	CCD-472	JL-347	10TS-D47
C57	.0033	600V	10%		V84CD33-10%		PMSD33	6DP-1-332	JL-333	6TM-D33
C58	270		10%	TCZ-270	1469-00027		22HS27	CM-19B-271K	CNO-327	MS-327
C59	680		10%		1469-00068		5HS68	CM-19B-681K	MCJ244	MS-368
C60	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C61	.1	400V			P488N-1	DF-104	CUB4PI	4DP-3-104	GEM-401	4TM-P10
C62	.1	400V			P488N-1	DF-104	CUB4PI	4DP-3-104	GEM-401	4TM-P10
C63	.0033	600V	10%	(.0022) †	V84CD33-10%		PMSD33	6DP-1-332K	JL-333	6TM-D33
C64	10000				BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C65	033	600V	10%		V84C8333-10%		PMS833	6DP-3-333	GEM-1613	6TM-S33
C66	75	4000V	10%							30TY-Q75
C67	1500	1400V			HVD-15-1500	D030-152	HVB20DI5	3CCD-152	2HV-215	30GA-D15

† Alternate Value

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: Setchell-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	½	817	B-8R	A47-5meg-Z	Q13-141	U85	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2	15K	½	811	BT-154		Q13-103X		Contrast
	5000Ω Tap			*		*		
R3A	500K	½	816	B-50-S	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWF-12	76-1	U8-38	Power Off-On
R4A	2.5meg	½	803	BX-83	A47-2.5meg-S	B11-239	SU-585	Vert. Hold
B	Shaft			Not Req.	FKS-1/4	SK8	Not Req.	
R5A	100K	½	802	BX-40	A47-100K-S	B11-128	SU-41	Brightness
B	Shaft			Not Req.	FKS-1/4	SK8	Not Req.	
R6A	2.5meg	½	803	BX-83	A47-2.5meg-S	B11-239	SU-585	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	SK8	Not Req.	
R7A	2.5meg	½	803	BX-83	A47-2.5meg-S	B11-239	SU-585	Height - Bottom
B	Shaft			Not Req.	FKS-1/4	SK8	Not Req.	
R8A	3000Ω	½	801	AB-8	A47-3000-S	B11-112	SU-8	Height - Top (Vert. Linearity)
B	Shaft			AK-1	FKS-1/4	SK8	Not Req.	

* Use 5000Ω Tap.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	2000Ω 5W			
R10	1500Ω 1W			
R11	470Ω			(180Ω) *
R12	470Ω			
R13	470Ω			
R14	220K			
R15	4700Ω			
R16	470Ω			
R17	100K			
R18	120K			
R19	68Ω			
R20	4700Ω			
R21	47K			
R22	470Ω			
R23	180Ω			
R24	1meg			
R25	3000Ω			
R26	22K			
R27	5000Ω 5W	PW5-5000	5W-SQ-5000	
R28	2200Ω			
R29	220K			
R30	220K			(120K) *
R31	470K			(220K) *
R32	150K			
R33	22K			
R34	2.2meg			
R35	470K			
R36	22K 1W			
R37	180Ω			
R38	180Ω			
R39	22K			
R40	22K			
R41	620Ω			
R42	150K			
R43	1meg			
R44	10K			
R45	330Ω 1W			
R46	47K			
R47	1000Ω			
R48	220K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R49	2.2meg			
R50	22K			
R51	2.2meg			
R52	47K			
R53	4700Ω			
R54	8200Ω			
R55	220K			
R56	4700Ω			
R57	470K			
R58	1meg			
R59	8200Ω			
R60	10meg			
R61	4.7meg			(2.2meg) *
R62	33K 1W			
R63	470Ω			
R64	470Ω			
R65	470Ω			
R66	470K			
R67	470K			
R68	470K			(1meg) *
R69	100K			
R70	68K			(100K) *
R71	1500Ω			(1200Ω) *
R72	150K			(220K) *
R73	2.2meg			
R74	100K			(120K) *
R75	22K			
R76	22K			(470Ω) *
R77	1meg			
R78	1000Ω			(1200Ω) *
R79	50K 10W	PW10-50K	10W-SQ-50K	
R80	3900Ω			
R81	2.2Ω			
R82	4000Ω 5W	PW5-4000	5W-SQ-4000	
R83	3300Ω 1W			
R84	3Ω 5W	PW5-3.0	5W-SQ-3.0	
R85	2Ω 5W †	PW5-2R	5W-SQ-2.0	
R86	220K			
R87	18K 2W			

* Alternate Value

† Fusible Type

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	1st Video IF		TV 131	6225	RTC-8556	T218	
L2	41.25MC Trap						
L3	2nd Video IF						
L4	3rd Video IF						
L5A	47.25MC Trap						
B	Sound IF						
L6	RF Choke (12uh)		BC-566	4632	RTC-8523	T862	
L7	Peaking (235uh)		TV-185	6181	RTC-8598	T315	
L8	Peaking (300uh)		TV-119	6155	RTC-8587	T218	
L9	Peaking (225uh)		TV-185	6181	RTC-8598	T315	
L10	Peaking (400uh)		TV-202	6136	RTC-8579	T322	
L11	Ratio Detector		TV-115	6271	RTC-8620	T237	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 100Ω (%)	REPLACEMENT DATA: Setchell-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
L12	.270A	25Ω	.75 Hy.	LM1223				C-36X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Setchell-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T1	117V ② 1.4A	105V ② 340A AC	8V@6.9A Tap ② 6.3V@8.3A	M1192 ①					① Alternate Part #TM0018A

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output		A-2853 ①		VO-100 ①	26S3	A-142X	
T3	Yoke (Horiz. 23MH) (105°) (Vert. 35MH)			PCM-1834 ②③	DY-46A ②④	Y-53 ②③	Y-62 & NW20	
	Rear Cover & Centering Device							
	Horiz. Output						D-838	

① Drill new mounting hole(s).
② Use original rear cover and centering device.
③ Use original yoke damping network if necessary.
④ Use original yoke plug. Connect yoke terminal #3 to yoke plug #3. Connect 3900Ω Resistor from yoke terminals #3 and #7 to yoke plug #4; yoke terminal #1 to yoke plug #5, yoke #6 to plug #6, yoke #4 to plug #1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T5	7900Ω	3-4Ω	M372 ①	A-2901	A-3823	26S46	S-18X	① Alternate Part #TM0036.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Setchell-Carlson PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	-	6A15	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Setchell-Carlson PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.270A		1N1763	40H	SR500	
M2	.270A		1N1763	40H	SR500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Setchell-Carlson PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M3	3AG	2A 250V			312002 (3AG 2A 250V)		3A2001	AGC 2	HKP
M4	21" length #26 wire								

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Setchell-Carlson PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M5	*		6GC1 *			* Dual Selenium Diode, Common Cathode Type
M6	1N80 ♦			1N80	1N80	♦ Video Detector Diode

MISCELLANEOUS

ITEM No.	PART NAME	Setchell-Carlson PART No.	NOTES
M7	Tuner (VHF)	57-B-48	STANDARD COIL REPLACEMENT #GG-4290-A

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

High Voltage Lead	Use BELDEN No. [illegible]
Shielded Hook-up Wire	Use BELDEN No. 8895 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

SETCHELL-CARLSON MODELS TL61, 19C61, 19T61, 61C (Ch. 361)

FOLDER 2

VHF TUNER PARTS LIST AND DESCRIPTIONS

57-B-48

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6BC8	V202	Mixer - Osc.	6CL8

RESISTORS

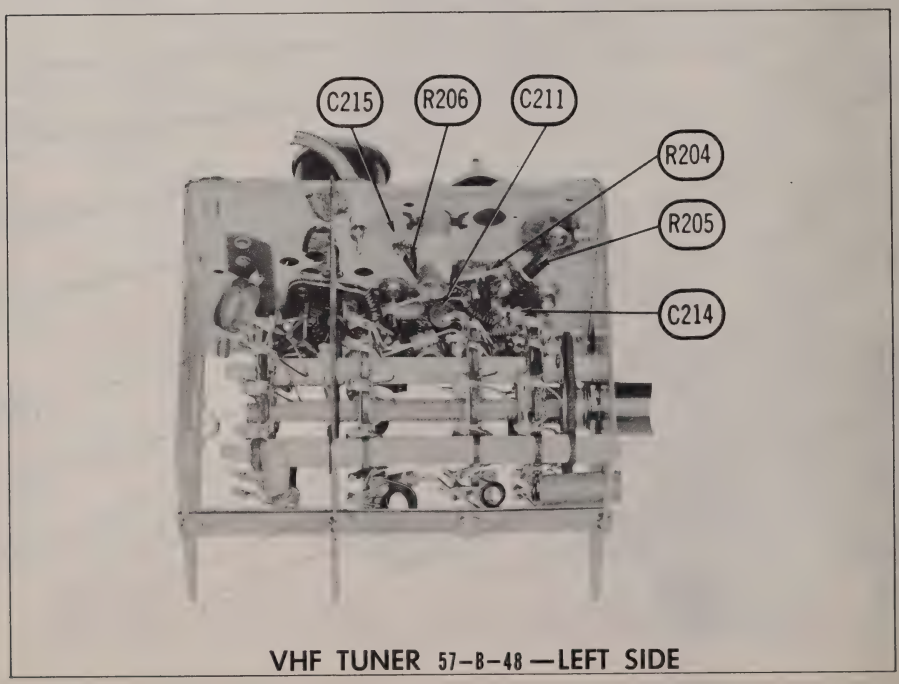
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	2.2meg				R205	220K			
R202	8200Ω				R206	2200Ω			
R203	470K				R207	15K			
R204	10K				R208	4700Ω			

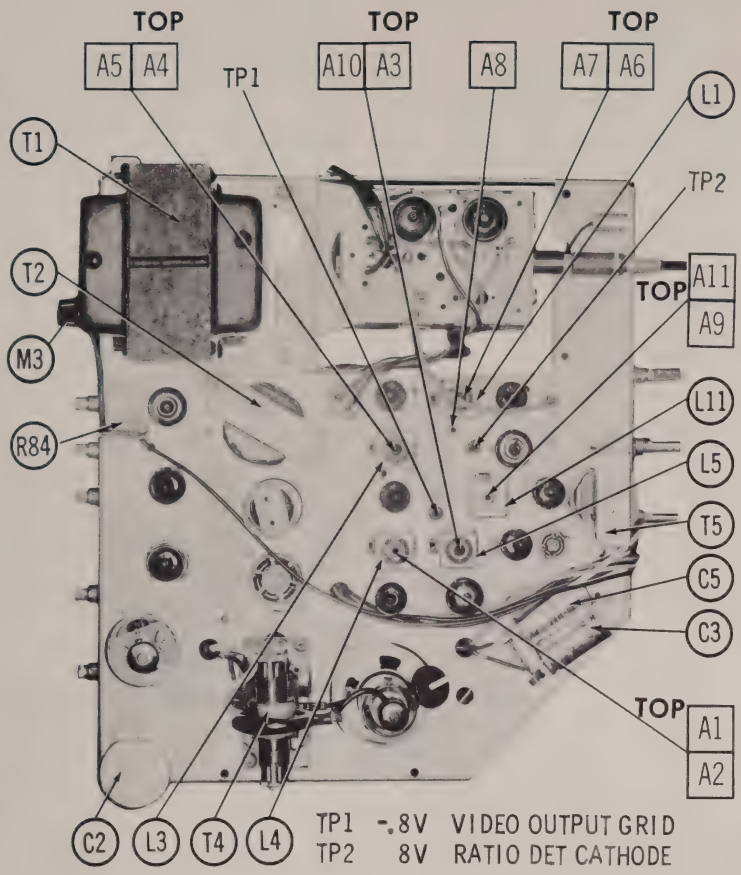
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

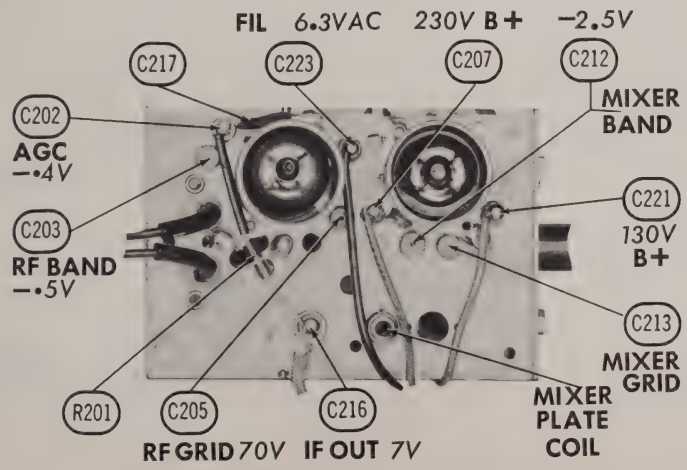
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	4				C10V4C			10TCC-V39
C202	1000		EF-001	MFT-1000		CCF-102	CT280A	
C203	9							10TCC-V18
C204	1.8 10%		NPO-SI 2.0					
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	47							
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.3 10%		NPO-SI 1.5	TCZ-1R5	C10V15C	CCTO-1R5	CNO-515	10TCC-V15
C209	.39 10%							
C210	.33 10%							
C211	15		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C212	1.5							
C213	100		EF-0001	MFT-100				
C214	2 10%		NPO-SI 2.0	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C218	10 NPO 5%		NPO-DI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C219	1.5 N7500 5%							
C220	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C223	1000		EF-001	MFT-1000		CCF-102	CT280A	



VHF TUNER 57-B-48 —LEFT SIDE



CHASSIS - TOP VIEW

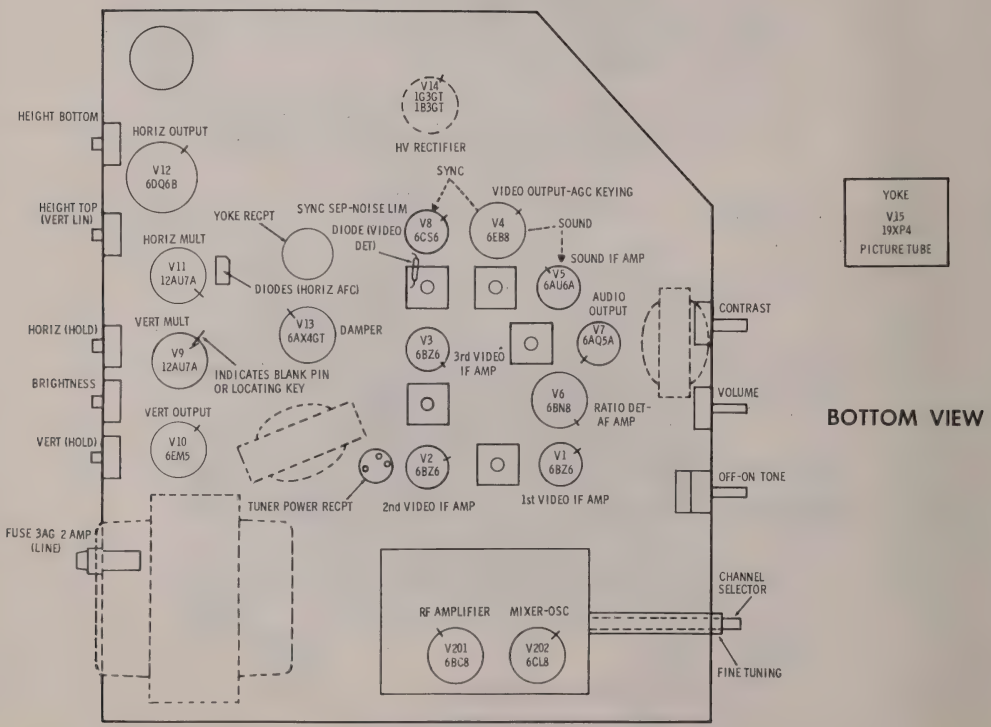


VHF TUNER 57-B-48 - TOP VIEW

RESISTANCE MEASUREMENTS

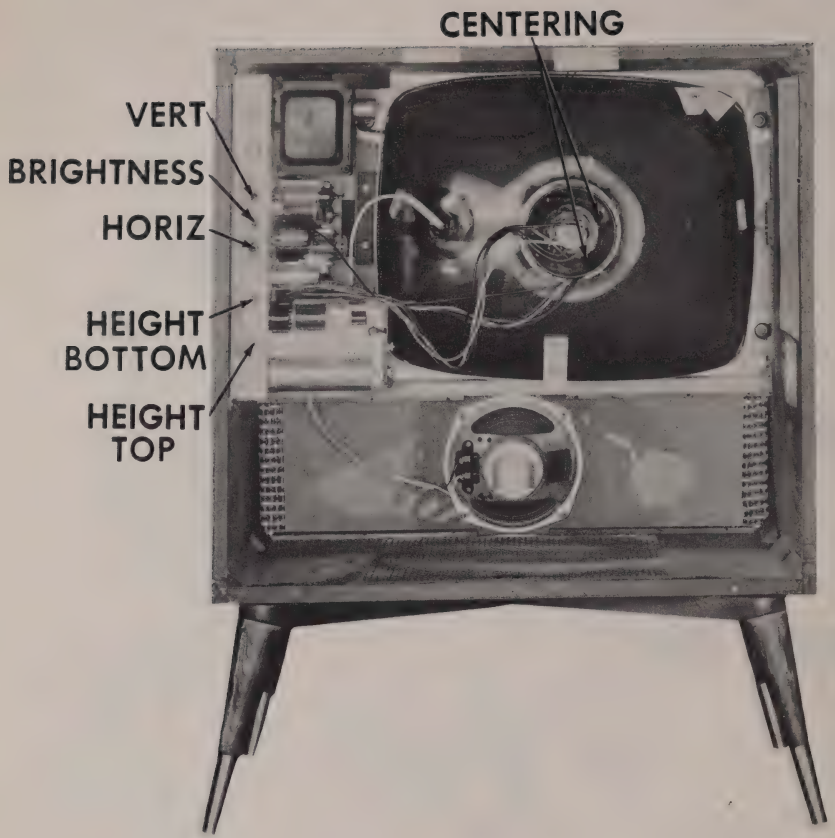
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	220K	470Ω	0Ω	.1Ω	▪540Ω	▪540Ω	470Ω		
V2	6BZ6	58K	INF	0Ω	.1Ω	†500Ω	†500Ω	▪68Ω		
V3	6BZ6	.1Ω	180Ω	0Ω	.1Ω	†4500Ω	†4500Ω	180Ω		
V4	6EB8	†18K	†19K	440K	.1Ω	0Ω	0Ω	1meg	†19K	†4000Ω
V5	6AU6A	1.4Ω	180Ω	.1Ω	0Ω	†25K	†25K	180Ω		
V6	6BN8	0Ω	INF	22K	.1Ω	0Ω	INF	†500K	• 20Ω	820Ω
V7	6AQ5A	1meg	330Ω	.1Ω	0Ω	†545Ω	†3300Ω	NC		
V8	6CS6	†2.2meg	0Ω	0Ω	.1Ω	23K	•1100Ω	2.2meg		
V9	12AU7A	•†1meg	•†1meg	4700Ω	.1Ω	.1Ω	†220K	13K	4700Ω	0Ω
V10	6EM5	†225Ω	NC	900K	.1Ω	0Ω	900K	• 1100Ω	NC	†450Ω
V11	12AU7A	†100K	150K	1500Ω	.1Ω	.1Ω	†68K	1.5meg	1500Ω	0Ω
V12	6DQ6B	TP	.1Ω	NC	†51K	1meg	NC	0Ω	0Ω	TOP CAP †10Ω
V13	6AX4GT	NC	NC	2.7meg	NC	†25Ω	NC	.1Ω	0Ω	
V14	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †235Ω
V15	19XP4	1.1Ω	170K	†470K	†25Ω	NC	NC	110K	0Ω	
V201	6BC8	†2000Ω	▲470K	▲0Ω	.1Ω	0Ω	INF	2.4meg	0Ω	0Ω
V202	6CL8	15K	†10K	0Ω	.1Ω	0Ω	†7700Ω	†5500Ω	0Ω	210K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION
▪ MEASURED FROM PIN 2 OF V2.
▲ MEASURED FROM PIN 6 OF V201.
TP TIE POINT



BOTTOM VIEW

TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the Horizontal Hold Control until the picture synchronizes horizontally. If the control must be turned to either extreme to sync the picture, or if slow warm-up causes frequency drift, replace the Horizontal Multivibrator Tube and readjust the Horizontal Hold Control.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs in front of cabinet.
2. Remove 12 wood screws holding rear cover.
3. Remove rear cover.
4. Remove picture tube socket,yoke plug, high voltage lead, and speaker plug.
5. Remove 2 screws holding antenna terminal board.
6. Remove 2 chassis screws at back of cabinet.
7. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove chassis for picture tube removal.

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 260**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 514

SILVERTONE CHASSIS 456.51706, 707, 708, 709, 528.51706, 707, 708, 709

Silvertone Models PC-1130, PC-1132, PC-1133, PC-1150, PC-1151, PC-1152, PC-1153, PC-1154, PC-1155, PC-1158, PC-1159, PC-1194, PC-1195, PC-1196, PC-1197, PC-1198, 1130, 1131, 1132, 1133, 1150, 1151, 1152, 1153, 1154, 1155, 1158, 1159, 1194, 1195, 1196, 1197, 1198 (Ch. 456.51700, 701, 720, 721, 528.51700, 701, 720, 721) were covered in PHOTOFACT Folder 2 - Set 514.

Models PC-1130, PC-1131, PC-1132, PC-1133, PC-1150, PC-1151, PC-1152, PC-1153, PC-1154, PC-1155, PC-1158, A, PC-1159, A, PC-2130, PC-2131, PC-2132, PC-2133, PC-2134, PC-2135, 1130, 1131, 1132, 1133, 1150, 1151, 1152, 1153, 1154, 1155, 1158, A, 1159, A, 2130, 2131, 2132, 2133, 2134, 2135 (Ch. 456.51706, 707, 708, 709, 528.51706, 707, 708, 709) are electrically similar except for the following changes.

COMPONENT CHANGES

R26 is omitted.

R27 is decreased from 1 meg to 620K.

A 27Ω Resistor is added from pin 6 of V4 to the junction of R3 and R27.

An 8.2 meg Resistor is added from the junction of R22 and R23 to the high side of R6 (AGC).

(Continued On The Reverse Side)

PRODUCTION CHANGE
BULLETIN 260

PRODUCTION CHANGE
BULLETIN 260

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	48-164-0	
Bezel	40-61-5	
Knob	52-1507-0	VHF Channel Selector
Knob	52-1508-0	Off-On Switch
Knob	52-926-0	UHF Fine Tuning, Models PC-2131, PC-2133, PC-2135, 2131, 2133, 2135
Knob	52-924-0	UHF Dial Indicator, Models PC-2131, PC-2133, PC-2135, 2131, 2133, 2135
Knob	52-1503-0	Volume Control, Models PC-2130, PC-2131, PC-2134, PC-2135, 2130, 2131, 2134, 2135
Knob	52-1532-0	Volume Control, Models PC-2132, PC-2133, 2132, 2133
Knob	52-1504-0	Brightness Control, Models PC-2130, PC-2131, PC-2134, PC-2135, 2130, 2131, 2134, 2135
Knob	52-1531-0	Brightness Control, Models PC-2132, PC-2133, 2132, 2133
Knob	52-1506-0	Contrast Control, Models PC-2130, PC-2131, PC-2134, PC-2135, 2130, 2131, 2134, 2135
Knob	52-1529-0	Contrast Control, Models PC-2132, PC-2133, 2132, 2133
Knob	52-1505-0	Vertical Hold Control, Models PC-2130, PC-2131, PC-2134, PC-2135, 2130, 2131, 2134, 2135
Knob	52-1530-0	Vertical Hold Control, Models PC-2132, PC-2133, 2132, 2133
Cabinet	42-243-0	Mahogany, Models PC-2130, PC-2131, 2130, 2131
Cabinet	42-244-0	Blond, Models PC-2132, PC-2133, 2132, 2133
Cabinet	42-249-0	Walnut, Models PC-2134, PC-2135, 2134, 2135
Leg	49-806	Mahogany, Models PC-2130, PC-2131, 2130, 2131
Leg	49-807	Blond, Models PC-2132, PC-2133, 2132, 2133
Leg	49-809	Walnut, Models PC-2134, PC-2135, 2134, 2135

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 532 FOLDER 3

C6A and B is omitted.

A220K Resistor is added from the center arm of R6 (AGC) to the Tuner RF AGC.

C7 in omitted.

R4 (Brightness Control) is changed to Part #24-479-0.

C29 is decreased from .047 mfd to .01 mfd.

R6 (AGC) is changed to Part #24-462-1.

R58 is increased from 170Ω 15 watt to 186Ω 15 watt (Part #61-204-0).

R59 is increased from 51Ω 20 watt to 60Ω 25 watt (Part #61-211-0).

TUBE CHANGES

V4 (Video Output) is changed from a Type 6BH8 to a Type 6BA8.

V11 (Damper) is changed from a Type 17DE4 to a Type 12AX4GTB.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 510

AIRLINE MODEL GTL-3801A

Airline Model GTL-3829A was covered in PHOTOFACT Folder 5 - Set 510.

Model GTL-3801A is electrically and mechanically similar. The following Cabinet and Cabinet Parts are changed.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	TA-1749	Function Selector
Knob	TK-244-3	Record
Knob	TK-256-2	Head Lifting
Knob	TK-243-2	Wind-Rewind
Knob	TK-283	Volume Control
Knob	TK-241-3	Tone Control
Cabinet	TC-1990-3	

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 3 IN SET 511

AIRLINE MODEL GTL-3802A

Airline Models GTL-3841A, GTL-3842A were covered in PHOTOFACT Folder 3 - Set 511.

Model GTL-3802A is electrically and mechanically similar except for the following changes.

COMPONENT CHANGES

M9 (1/4 Track Stereo, Erase Head) is changed to Part #TH-602.

M13 (Motor and Pulley Assembly) is changed to Part #TA-1253.

The following Cabinet and Cabinet Parts listing are changed.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	TA-1255	Volume Control
Knob	TK-246	Tone Control
Knob	TB-1010	Push-Button
Cabinet	TA-1747	

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 513

RCA VICTOR MODELS 171A052, U, 171A054, U (CH. KCS130YF, YH)

RCA Victor Models 171A032X, 171A034, U, 171A040, U, 171A042, U, 171A043, U, 171A044, U, 171A047, U, 171A061, U, 171A062, U, 171A067, U, 171A068, U, 171AR044, 171AR062, 171AR067 (Ch. KCS130A, B, F, H, K, M, N) were covered in PHOTOFACT Folder 2 - Set 513.

Models 171A052, U, 171A054, U (Ch. KCS130YF, YH) are electrically similar except for the following Tuner changes.

Models 171A052, 171A054 use Tuner KRK96K.

Models 171A052U, 171A054U use Tuners KRK97K/KRK86AE.

These Tuners may be found in PHOTOFACT Folder 2 - Set 517.

PHOTOFACT® Folder

APELCO
MODEL AR-9

APELCO
MODEL AR-9

APELCO
MODEL AR-9

TRADE NAME	Apelco Model AR-9
MANUFACTURER	Apelco Co., 213 E. Grand Ave., South San Francisco, California
TYPE SET	Battery Operated 9 Tube Crystal Controlled Citizens Band Transmitter-Receiver (Some versions operate on AC)
POWER SUPPLY	12 Volt Storage Battery RATING 4.5 Amp @ 12.6 Volts DC
TUNING RANGE	Any 5 of Citizens Band Channels 1 thru 22

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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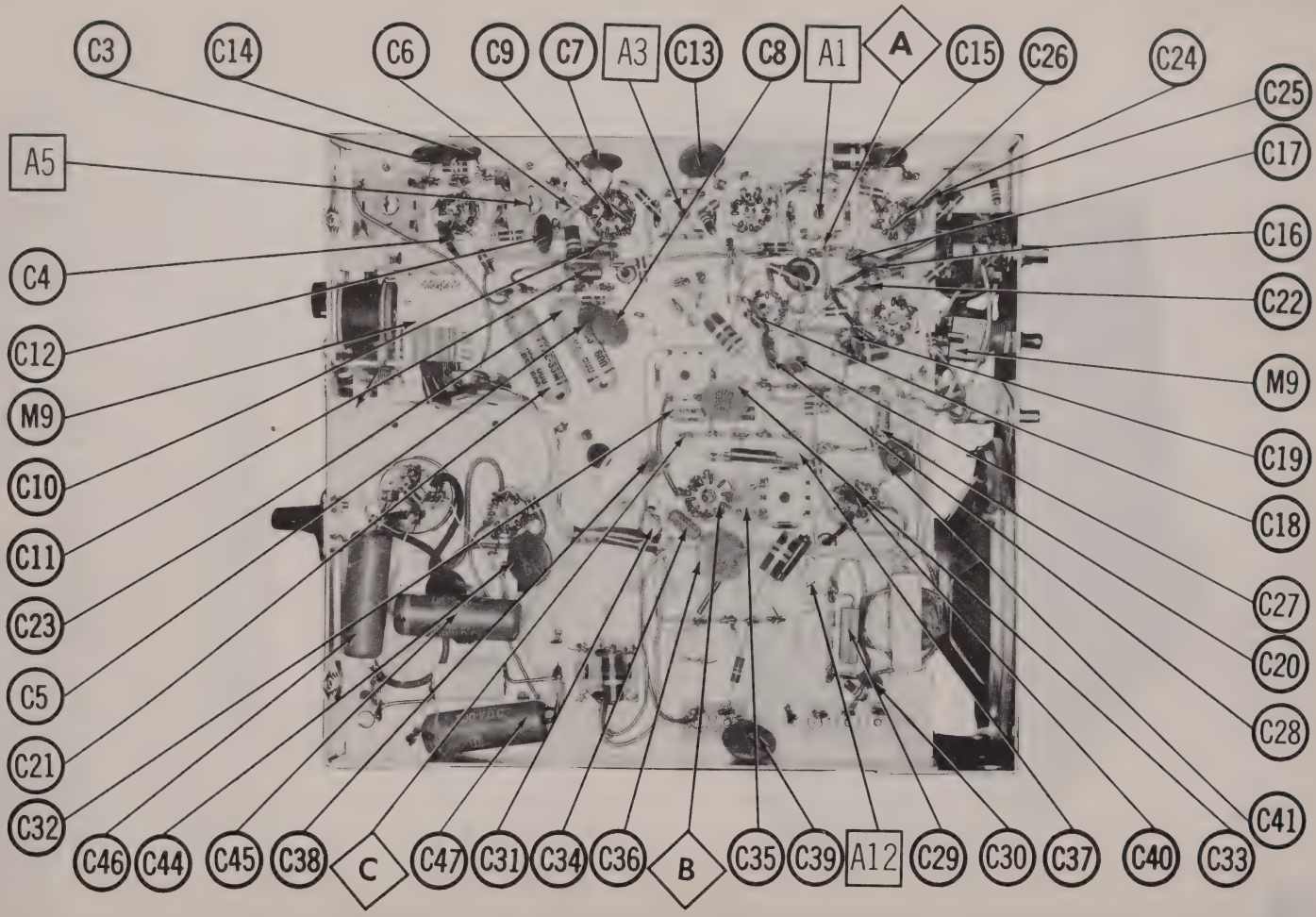
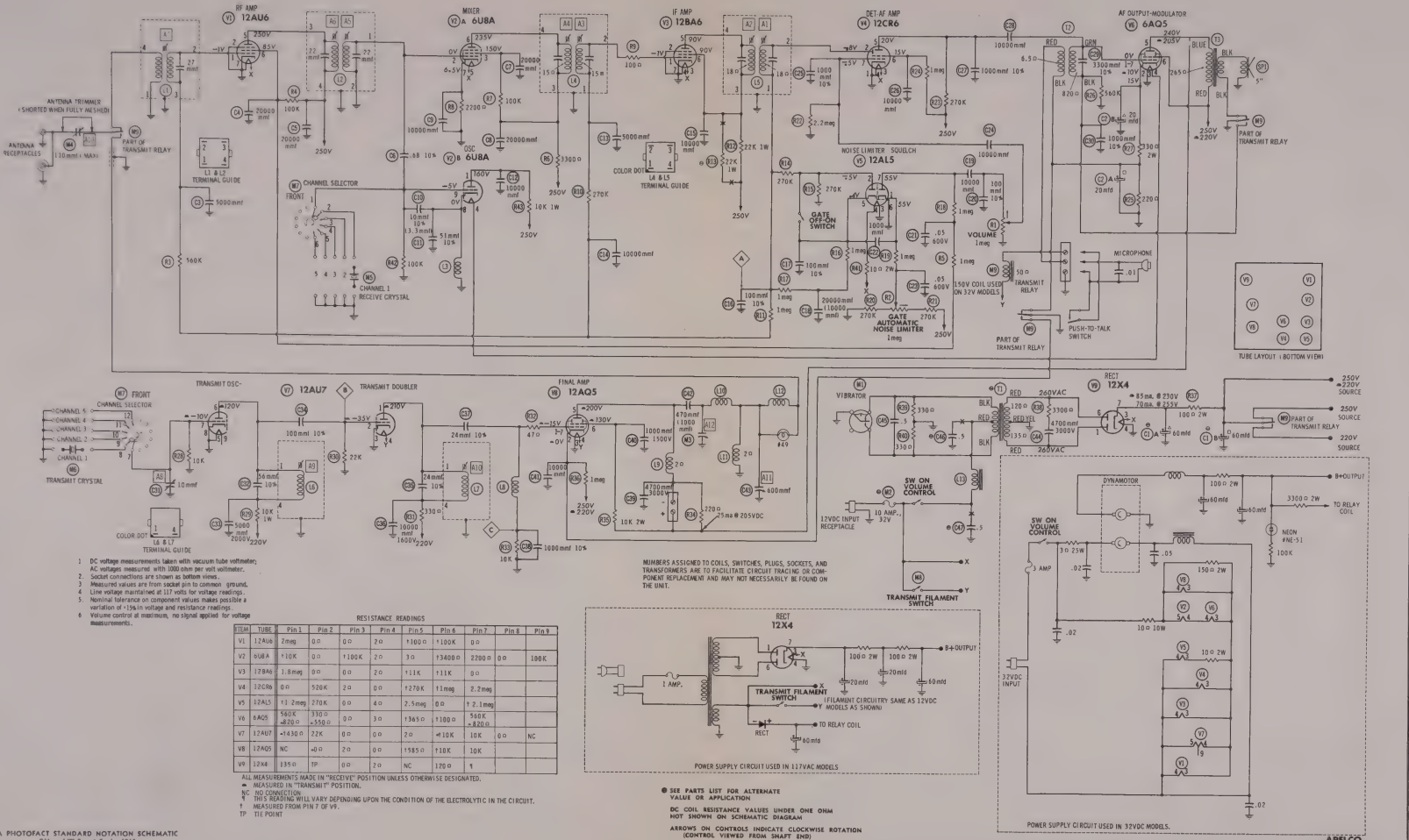
KZ430



CHASSIS BOTTOM VIEW-ALIGNMENT, CAPACITOR & MISC. IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU6	2meg	0Ω	0Ω	2Ω	†100Ω	†100K	0Ω		
V2	6U8A	†10K	0Ω	†100K	2Ω	3Ω	†3400Ω	2200Ω	0Ω	100K
V3	12BA6	1.8meg	0Ω	0Ω	2Ω	†11K	†11K	0Ω		
V4	12CR6	0Ω	520K	2Ω	0Ω	†270K	†1meg	2.2meg		
V5	12AL5	†1.2meg	270K	0Ω	4Ω	2.5meg	0Ω	†2.1meg		
V6	6AQ5	560K +820Ω	330Ω +550Ω	0Ω	3Ω	†365Ω	†100Ω	560K +820Ω		
V7	12AU7	•1430Ω	22K	0Ω	0Ω	2Ω	•†10K	10K	0Ω	NC
V8	12AQ5	NC	•0Ω	2Ω	0Ω	†585Ω	†10K	10K		
V9	12x4	135Ω	TP	0Ω	2Ω	NC	120Ω	†		

ALL MEASUREMENTS MADE IN "RECEIVE" POSITION UNLESS OTHERWISE DESIGNATED.
• MEASURED IN "TRANSMIT" POSITION.
NC NO CONNECTION
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
‡ MEASURED FROM PIN 7 OF V9.
TP TIE POINT

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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APELCO MODEL AR-9

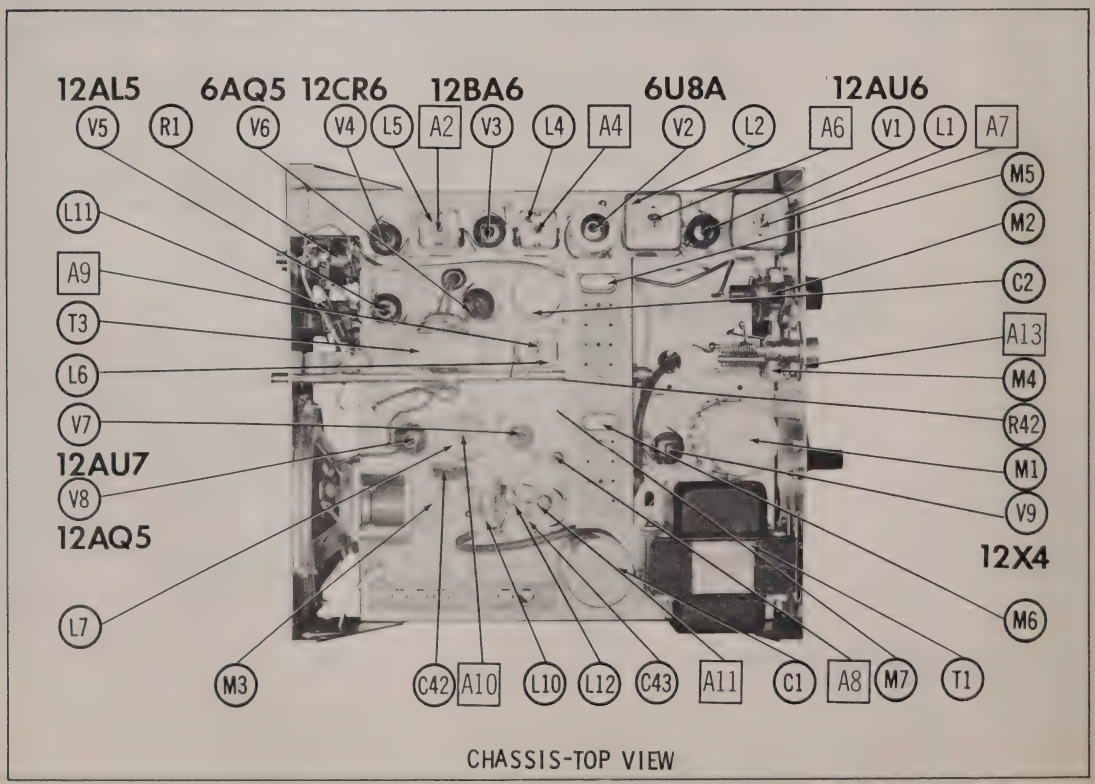
RECEIVER

Turn Gate Control (R2) to off.

1. Connect a signal generator tuned to 455KC (400% Mod.) thru .1mfd to pin 2 of V2A (Mixer), common to chassis. Connect a DC VTVM to point Ⓐ. Adjust A1, A2, A3, and A4 for maximum deflection.
2. Change connection of signal generator to the antenna socket and retune generator to 27.085KC (Channel 11). Adjust A5, A6 and A7 for maximum deflection.

TRANSMITTER

1. Connect a 52Ω dummy load to antenna socket. Using a Frequency Meter, adjust A8 to frequency indicated on osc. crystal for zero beat, (within 100 cps.)
2. Connect DC probe of VTVM to point Ⓑ, common to chassis. Adjust A9 on channel 11 for maximum deflection of VTVM and then back off about 10% on the long slope. (When the crystal oscillator is tuned in one direction the output will increase slowly -- long slope -- then suddenly fall off).
3. Connect DC probe of VTVM to point Ⓒ, common to chassis. Adjust A10 for maximum deflection (approximately 30 volts).
4. Connect DC milliammeter to two screw terminal strip and adjust A11 and A12 alternately until the meter reads 25ma. Care should be taken not to exceed this current, otherwise the maximum legal plate input of 5 watts will be exceeded.
5. Adjustment A13 is intended to cancel out the internal wiring inductance between the pi section load capacitor and the antenna coaxial feed. The output of the transmitter is designed to match from 25 to 75 ohms. This adjustment (A13) may also be used to compensate for a standing wave ratio appearing on the coaxial cable feed to the antenna. An antenna may be off frequency by several inches and yet be loaded efficiently by the adjustment of A13. A12 is shorted out of the circuit when fully meshed.



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12AU6	V6	AF Output-Modulator	6AQ5
V2	Mixer-Osc.	6U8A	V7	Trans. Osc. -Doubler	12AU7
V3	IF Amplifier	12BA6	V8	Final Amplifier	12AQ5
V4	Det. -AF Amp.	12CR6	V9	Rectifier	12X4
V5	Noise Limiter-Squelch	12AL5			

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	APELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	450		AFH2-59	A0500	FP148	TMS-1790	TVL-1730	Note 1
B	■60	450			BR6045	TC795	TD-50-450	TVA-1714	Note 1
C2A	■20	100		AFH2-08	B0090	FP208	TMD-2075	TVL-2415	
B	▲20	100							

Note 1. AC versions use 20-20mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C6	.68 10%		NPO-SI .68	TCZ-R68				
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10 10%	(3, 3) †	NPO-SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C11	51 10%		NPO-SI 51	D6-500	L10Q51	CCD-500	GP450	10TS-Q50
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C17	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C18	20000	(10000) †	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C21	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C22	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	3300 10%		1469-0033		1R5D33	CM-20B-332K	MCJ462	MS-233
C30	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C31	10 max.							
C32	56 10%		NPO-SI 56	D6-560	L10Q56	CCD-560	GP456	10TS-Q56
C33	5000 2000V			DD30-502	HVC20D5	3CCD-502	2HV-247	BL-D50
C34	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C35	24 10%		1469-000024	TCZ-24	22R5Q24	CM-19B-240K	MCB220	MS-424
C36	10000 1600V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C37	24 10%		1469-000024	TCZ-24	22R5Q24	CM-19B-240K	MCB220	MS-424
C38	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C39	4700 3000V			DD30-472		3CCD-502	3HV-247	30GA-D47
C40	1000 1500V		DAC-2	DD30-102	HVB20D1	3CCD-102	UAC-210	BL-D10
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	470	(1000) †	1468-00047		5W5T47	CM-19B-471M	MCJ244	1FM-347
C43	600 max.							
C44	4700 3000V			DD30-472		3CCD-502	3HV-247	30GA-D47
C45	.5 200V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	.5 200V	Note 1	P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50
C47	.5 200V	Note 1	P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50

Note 1. Not used in some versions.
† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	APELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	CM-16666	B-69	A47-1meg-S	Q11-137	U54	Volume
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			KR-2	SWE-20	76-2	US-27	Power Off-On
R2A	1meg	½	CM-18888	B-69	A47-1meg-S	Q11-137	U54	Gate A. N. L.
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Gate Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R3	560K			
R4	100K			
R5	1meg			
R6	3300Ω			
R7	100K			
R8	2200Ω			
R9	100Ω			
R10	270K			
R11	1meg			
R12	22K 1W			
R13	22K 1W			Note 1
R14	270K			
R15	270K			
R16	1meg			
R17	1meg			
R18	1meg			
R19	1meg			
R20	270K			
R21	270K			
R22	2, 2meg			
R23	270K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R24	1meg			
R25	220Ω			
R26	560K			
R27	330Ω 2W			
R28	10K			
R29	10K 1W			
R30	22K			
R31	330Ω			
R32	47Ω			
R33	10K			
R34	220Ω			
R35	10K 2W			
R36	1meg			
R37	100Ω 2W			
R38	3300Ω			
R39	330Ω			
R40	330Ω			
R41	10Ω 2W			
R42	100K			
R43	10K 1W			

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	APELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Ant.	TL-61					
L2	RF	TL-62					
L3	RF Choke (1.5uh)		BC-562	4604	RTC-8516	T856	
L4	Input IF	302217K	BC-352	12-C1	RTC-8632	T607	
L5	Output IF	3Q2225K	BC-352	12-C2	RTC-8633	T608	
L6	Osc. Plate	TL-65					
L7	Doubler Plate	TL-64					
L8	RF Choke (2uh)		BC-563	4606	RTC-8517	T857	
L9	RF Choke (15uh)			4624	RTC-8524	T862	
L10	Final Plate	TL-63					
L11	RF Choke (15uh)			4624	RTC-8524	T862	
L12	Output						
L13	Hash Choke (10uh)	T105-116T	BC-537	7825-8	RTC-9182		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	APELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	12VCT @ 2.7A	520VCT @ .085A		ST-86 ①					① Part #ST-89 used for AC Operation.

TRANSFORMER MIC

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	APELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1	14	ST-88					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	APELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	5900Ω	3-4Ω	ST-19					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	APELCO PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	220006	5A07	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				APELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6	115v	G-8301	6301	G1601	6301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			APELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	10A ① 32V			313010 (3AG 10A 32V)	342001	AGC 10	HKP

① AC versions use 1A in this application.

MISCELLANEOUS

ITEM No.	PART NAME	APELCO PART No.	NOTES
M3	Trimmer Cap		Final Amp. Tank
M4	Trimmer Cap		110mmf Max. Antenna Series
M5	Crystal		Receiver (Order Freq. Desired)
M6	Crystal		Transmit (Order Freq. Desired)
M7	Switch		Channel Selector (Rotary Type)
M8	Switch		Transmitter Filaments (Toggle Type)
M9	Relay	579	Transmit

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT® Folder

**BELL SOUND
MODEL 2418**

BELL SOUND
MODEL 2418

BELL SOUND
MODEL 2418

TRADE NAME	Bell Sound Model 2418
MANUFACTURER	Bell Sound Div., Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus 7, Ohio
TYPE SET	AC Operated 9 Tube Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles (Some Versions are 50~)
RATING	90 Watts, .85 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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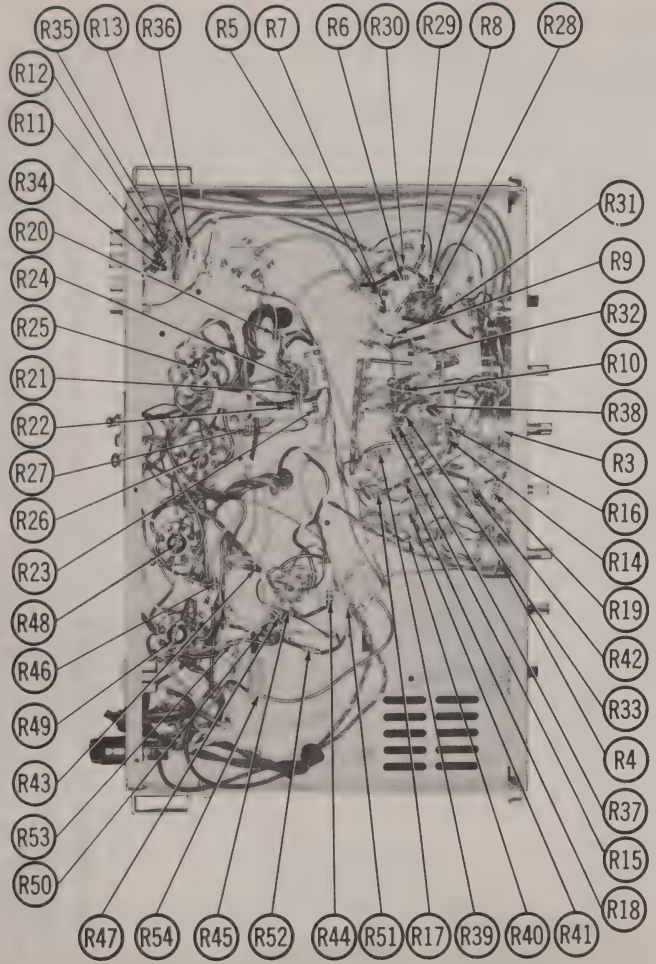
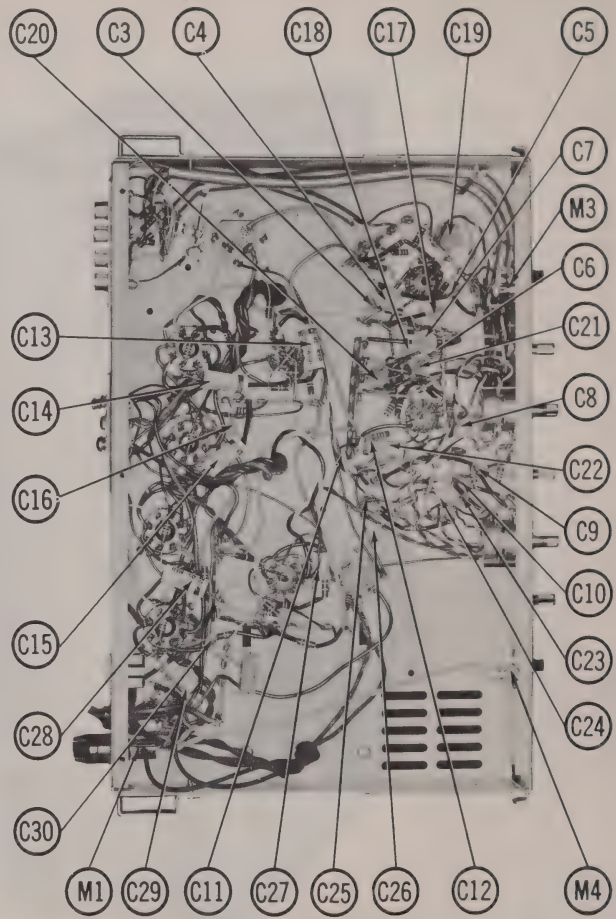
KV446

SET 532 FOLDER 5



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



CHASSIS BOTTOM VIEW
CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

ITEM No.	USE	TYPE
V1	Left Channel Preamp. - Right Channel Preamp.	ECC83/12AX7
V2	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V3	Left Channel AF Amp. - Phase Inverter	ECC83/12AX7
V4	Left Channel Output	6V6GT
V5	Left Channel Output	6V6GT
V6	Right Channel AF Amp. - Phase Inverter	ECC83/12AX7
V7	Right Channel Output	6V6GT
V8	Right Channel Output	6V6GT
V9	Rectifier	EZ81 (6CA4) *

* Alternate

ELECTROLYTIC CAPACITORS

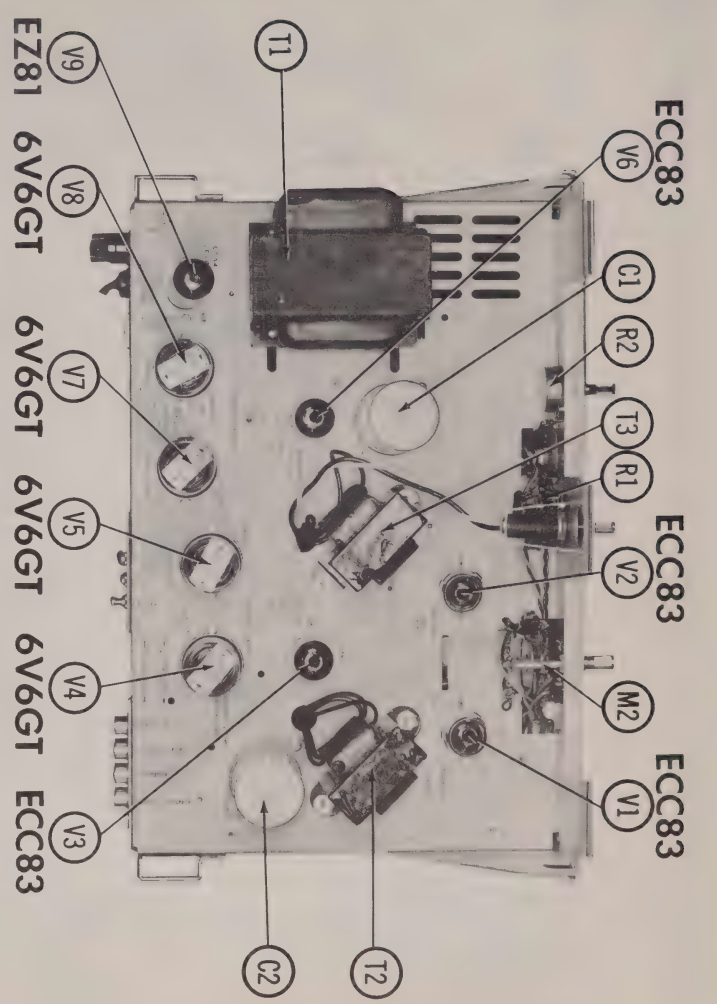
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	23B29	AFH2-57	B0450	FP238	TMD-2650	TVL-2764	
B	▲40	450							
C2A	■20	350	23B98	AFH3-121	C0880	FP366.5	TMT-3474	TVL-3752	
B	▲20	350							
C	▲150	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C4	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C9	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C10	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C11	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C12	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C13	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C14	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C15	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C16	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C17	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C18	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C23	390 10%		DI-390	DD-391	L10T39	CCD-391	GP391	10TS-T39
C24	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C25	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C26	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C27	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C28	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C29	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C30	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K		15A88	B-76	AD47-500K-Z		FA55A	Volume, Right Channel
B	500K			SR-76	Not Req.		RU55A	Volume, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R2A	2meg		15A87	B-75	A47-2meg-S	Q11-139	U56	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	2meg		15A89	B-76	AD47-2meg-Z		FA26A	Bass, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Bass, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	2meg		15A89	B-76	AD47-2meg-Z		FA26A	Treble, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Treble, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	10K				R30	470K			
R6	47K				R31	1500Ω			
R7	470K				R32	220K			
R8	1500Ω				R33	1meg			
R9	220K				R34	27K			
R10	1meg				R35	1meg			
R11	27K				R36	1meg			
R12	1meg				R37	10meg			
R13	1meg				R38	47K			
R14	10meg				R39	10K			
R15	47K				R40	220K			
R16	10K				R41	47K			
R17	220K				R42	27K			
R18	47K				R43	1.2meg			
R19	27K				R44	1800Ω			
R20	1.2meg				R45	10meg			
R21	1800Ω				R46	150K			
R22	10meg				R47	150K			
R23	150K				R48	470K			
R24	150K				R49	470K			
R25	470K				R50	330K			
R26	470K				R51	330K			
R27	330K				R52	27K			
R28	10K				R53	15K			
R29	47K				R54	2200Ω 2W			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .85A	600VCT ⓐ .135A DC	6.3VCT ⓐ 3.5A	32B111					① Part #32B122 used with 50v version.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7400Ω CT	16Ω Tap ⓐ 8Ω	32B110					
T3	7400Ω CT	16Ω Tap ⓐ 8Ω	32B110					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL SOUND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 125V S/B	53A16	53A8	313002 (3AG 2A 125V) S/B	342001	AGC2	HKP

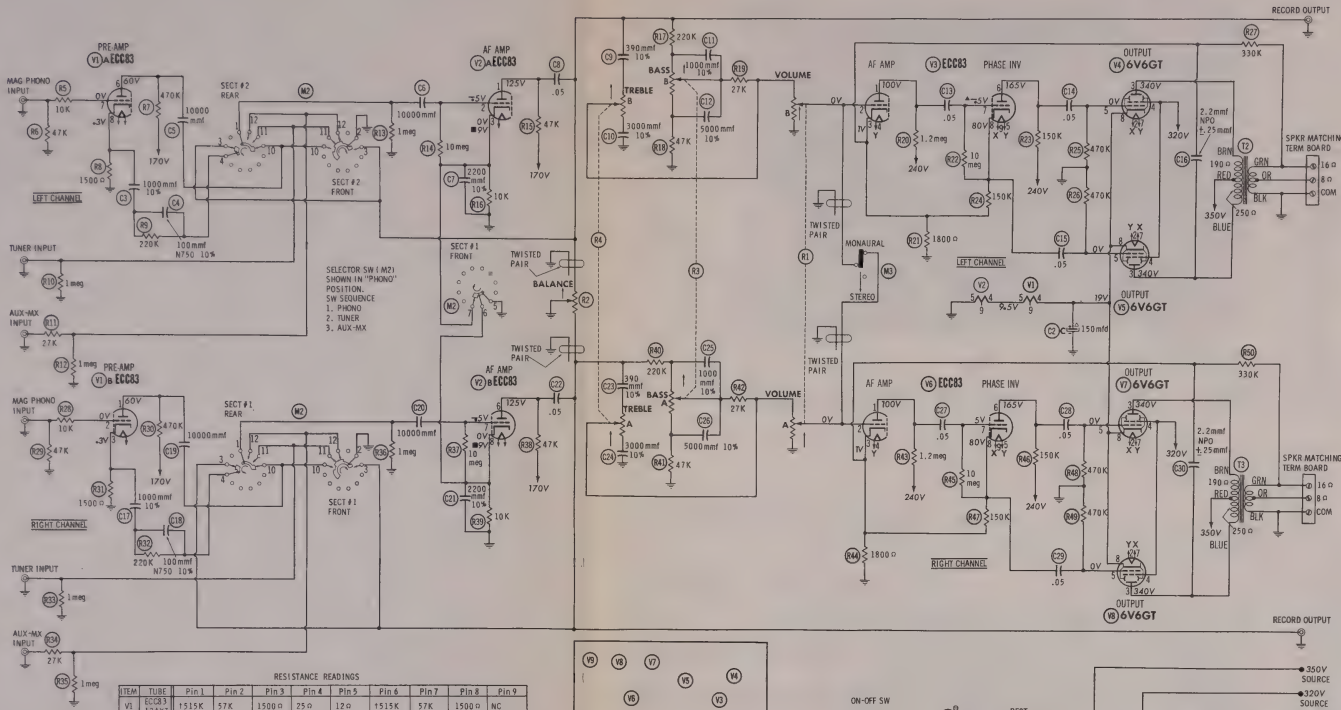
MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M2	Switch	43A80	Function Selector (Rotary Wafer Type)
M3	Switch	43A67	Monaural-Stero (SPDT Slide Type)
M4	Switch	43A91	Power Off-On (SPDT Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	84A59	Volume, Balance
Knob	84A61	Bass, Treble
Knob	84A70	Function Selector



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	↑515K	57K	1500Ω	25Ω	12Ω	↑515K	57K	1500Ω	NC
V2	ECC83 12AX7	↑90K	10meg	0Ω ●10K	12Ω	0Ω	↑90K	10meg	0Ω ●10K	NC
V3	ECC83 12AX7	↑1.2meg	0Ω	1800Ω	.1Ω	.1Ω	↑165K	10meg	150K	.1Ω
V4	6V6GT	TP	.1Ω	↑190Ω	↑2200Ω	470K	TP	.1Ω	25Ω	
V5	6V6GT	TP	.1Ω	↑250Ω	↑2200Ω	470K	NC	.1Ω	25Ω	
V6	ECC83 12AX7	↑1.2meg	0Ω	1800Ω	.1Ω	.1Ω	↑165K	10meg	150K	.1Ω
V7	6V6GT	TP	.1Ω	↑190Ω	↑2200Ω	470K	NC	.1Ω	25Ω	
V8	6V6GT	TP	.1Ω	↑250Ω	↑2200Ω	470K	NC	.1Ω	25Ω	
V9	EZ81	44Ω	NC	¶150K	.1Ω	.1Ω	NC	48Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 3 OF V9.
▲ MEASURED FROM CATHODE.
■ MEASURED IN TUNER OR AUXILIARY POSITION
NC NO CONNECTION
TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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BELL SOUND MODEL 2418

PHOTOFACT® Folder

KNIGHT MODELS KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)

KNIGHT MODELS KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)

MODEL KN-3225

KNIGHT MODELS KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)

TRADE NAME	Knight Models KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	Battery Operated Transistorized 25 Watt Mobile Amplifier (Model KN-3200 is a 3-speed Manual Record Player "top" for Model KN-3225)
POWER SUPPLY	12 Volt Storage Battery RATING .5A@12.6 Volts DC (No Signal) 4A@12.6 Volts DC (With Signal)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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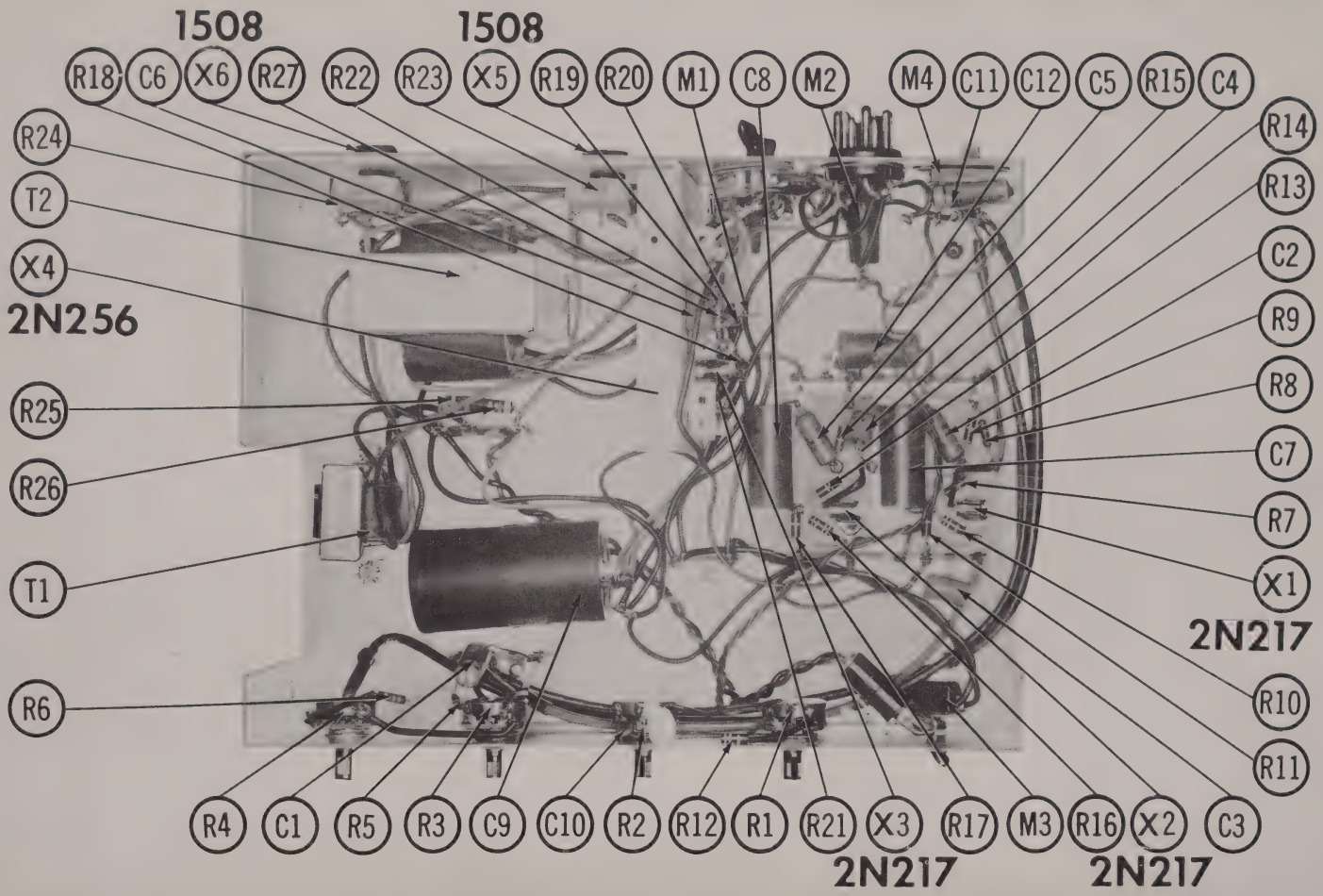
KX490

SET 532 FOLDER 6



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N217	AF Amplifier	2N408	2N361	2N217	PNP
	2N185 *	AF Amplifier	2N408	2N633	2N270	PNP
X2	2N217	AF Amplifier	2N408	2N361	2N217	PNP
	2N185 *	AF Amplifier	2N408	2N633	2N270	PNP
X3	2N217	Emitter Follower	2N408	2N361	2N217	PNP
	2N185 *	Emitter Follower	2N408	2N633	2N270	PNP
X4	2N256	Driver	2N301			PNP
	2N301 *	Driver	2N301			PNP
X5	1508	Output	2N278			PNP
	2N278 *	Output	2N278			PNP
X6	1508	Output	2N278			PNP
	2N278 *	Output	2N278			PNP

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	15	CE-256D	PTT-15025	NLW25-15	TT25X25	MLV25-15	TE-1157.1	
C2	50	3	CE-506H	PTT-3050	NLW50-3	TT6X50	MLV50-3	TE-1058	
C3	25	15	CE-256D	PTT-15025	NLW25-15	TT25X25	MLV25-15	TE-1157.1	
C4	25	15	CE-256D	PTT-15025	NLW25-15	TT25X25	MLV25-15	TE-1157.1	
C5	50	3	CE-506H	PTT-3050	NLW50-3	TT6X50	MLV50-3	TE-1058	
C6	25	15	CE-256D	PTT-15025	NLW25-15	TT25X25	MLV25-15	TE-1157.1	
C7	150	15	CE-157C	PRS1370	BR1505	TC25015	TD-150-50	TVA-1311	
C8	150	15	CE-157C	PRS1370	BR1505	TC25015	TD-150-50	TVA-1311	
C9	2000	30	CE-208	AFH1-14-50		WP068 / TC2505		TVLS-1250 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	220000 3V			UK-224				HY-125
C11	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C12	.22 200V		P288N-22		CUB2P22	2TM-4-224	GEM-2022	2TM-P22

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	10K	½	RP-103K	B-15	A47-10K-Z	Q13-116	U18	Master (Volume)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	10K	⅓	RP-103K	B-15	A47-10K-Z	Q13-116	U18	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	10K	½	RP-103K	B-15	A47-10K-Z	Q13-116	U18	Phono
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4	350Ω	½	RP-351F					Microphone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	1meg				R16	4700Ω			
R6	330Ω				R17	1000Ω			
R7	100K				R18	62K			
R8	10K				R19	3300Ω			
R9	1000Ω				R20	270Ω			
R10	4700Ω				R21	1000Ω			
R11	1000Ω				R22	1.5Ω 1W			
R12	4700Ω				R23	0.3Ω 5W			
R13	100K				R24	0.3Ω 5W			
R14	10K				R25	390Ω 1W			
R15	1000Ω				R26	4.7Ω 1W			
					R27	330Ω			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	LD-0016					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	12Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	LO-0163					
		SEC. 2						
		30Ω						

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	KNIGHT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	4A	JR-0035 *		5J2		* Silicon Type

FUSES

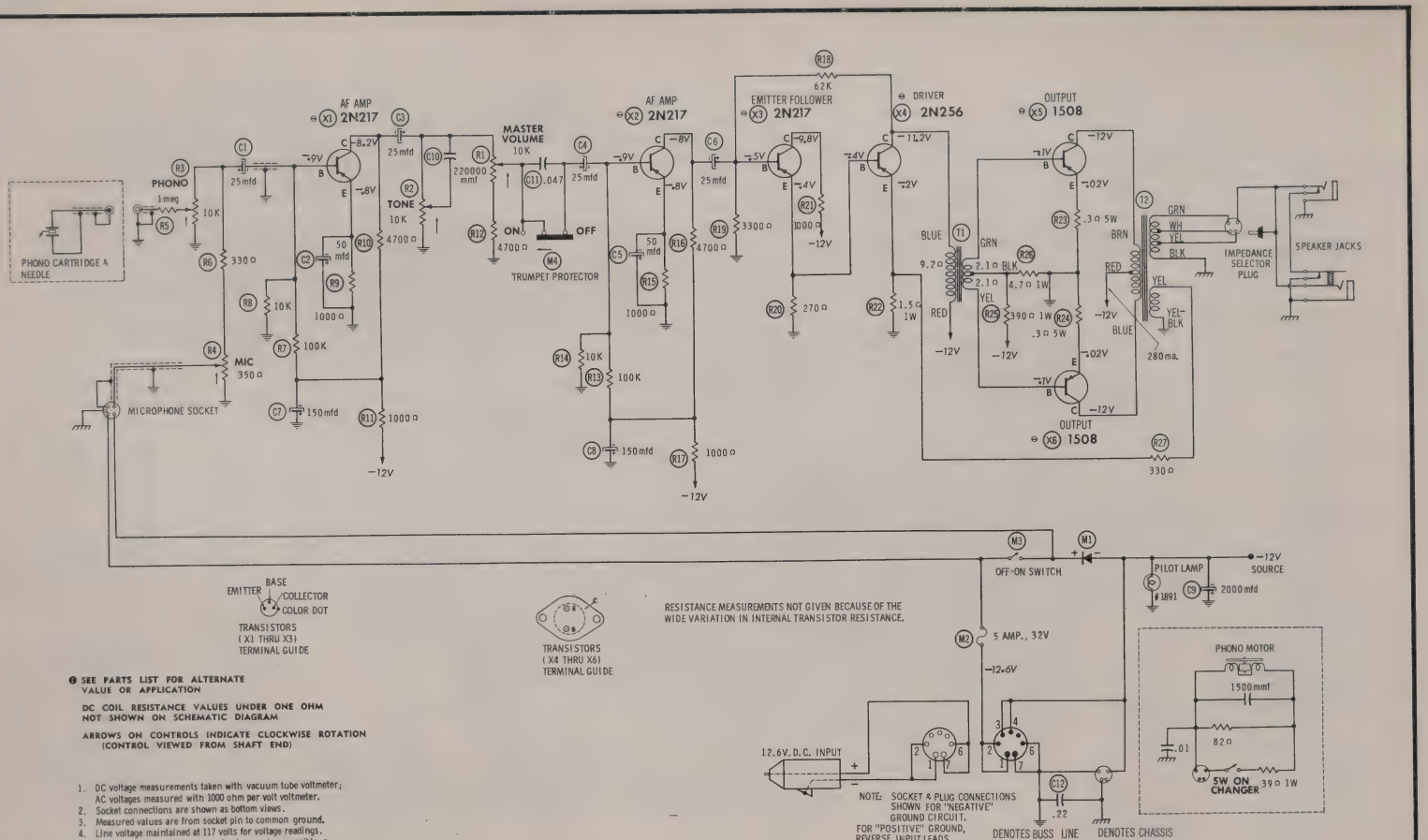
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	4AG	5A 32V			411005 (4AG 5A 32V)	442001	AGS 5	HCM

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M3	Switch		Off-On (Toggle Type)
M4	Switch		Trumpet (SPDT, Slide Type)

KNIGHT MODELS KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)

FOLDER 6



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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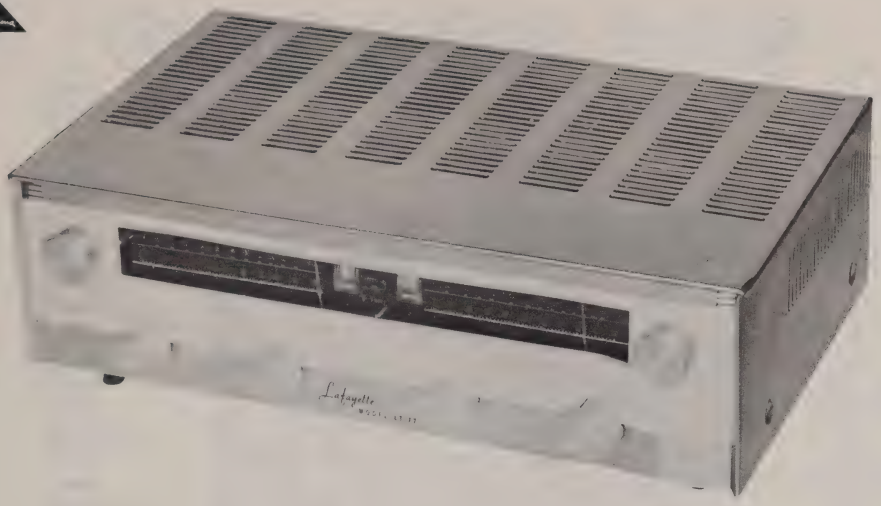
KNIGHT MODELS KN-3200 (35DU797, 88SX949), KN-3225 (35DU796, 88SU998)

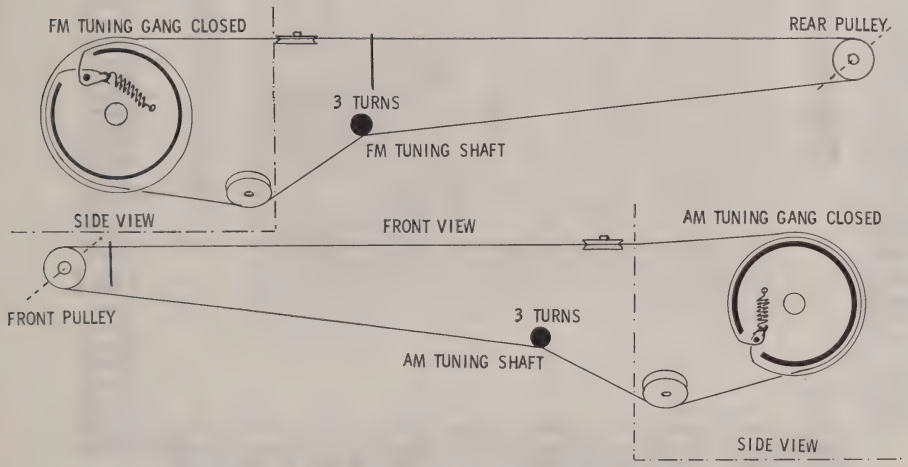
PHOTOFACT® Folder

**LAFAYETTE
MODEL LT-77**



TRADE NAME	LaFayette Model LT-77		
SUPPLIER	LaFayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y.		
TYPE SET	AC Operated 11 Tube FM-AM Tuner		
POWER SUPPLY	105 – 125 Volts AC, 50-60 Cycles	RATING	40 Watts, .37 Amp. @117 Volts AC
TUNING RANGE–BROADCAST	530 – 1650KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



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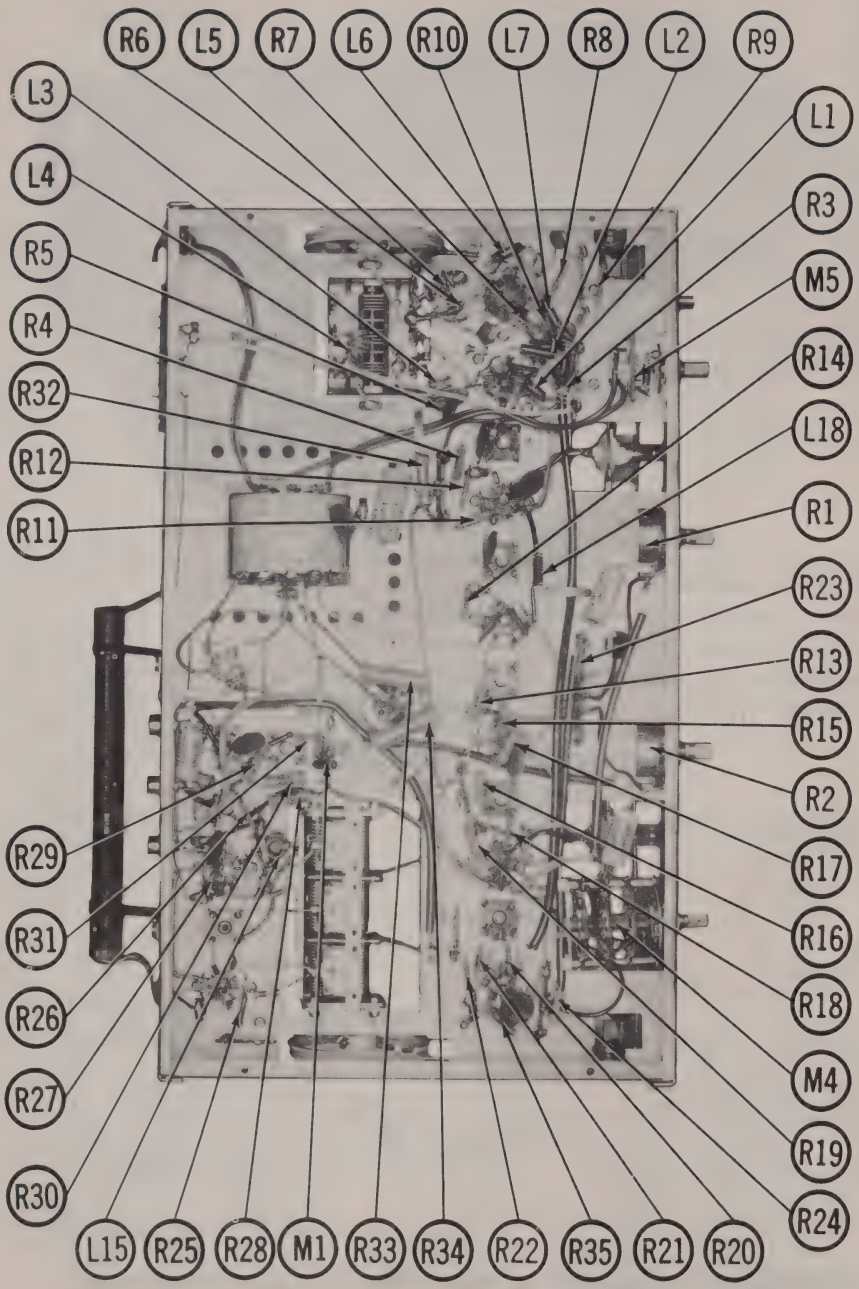
KL468

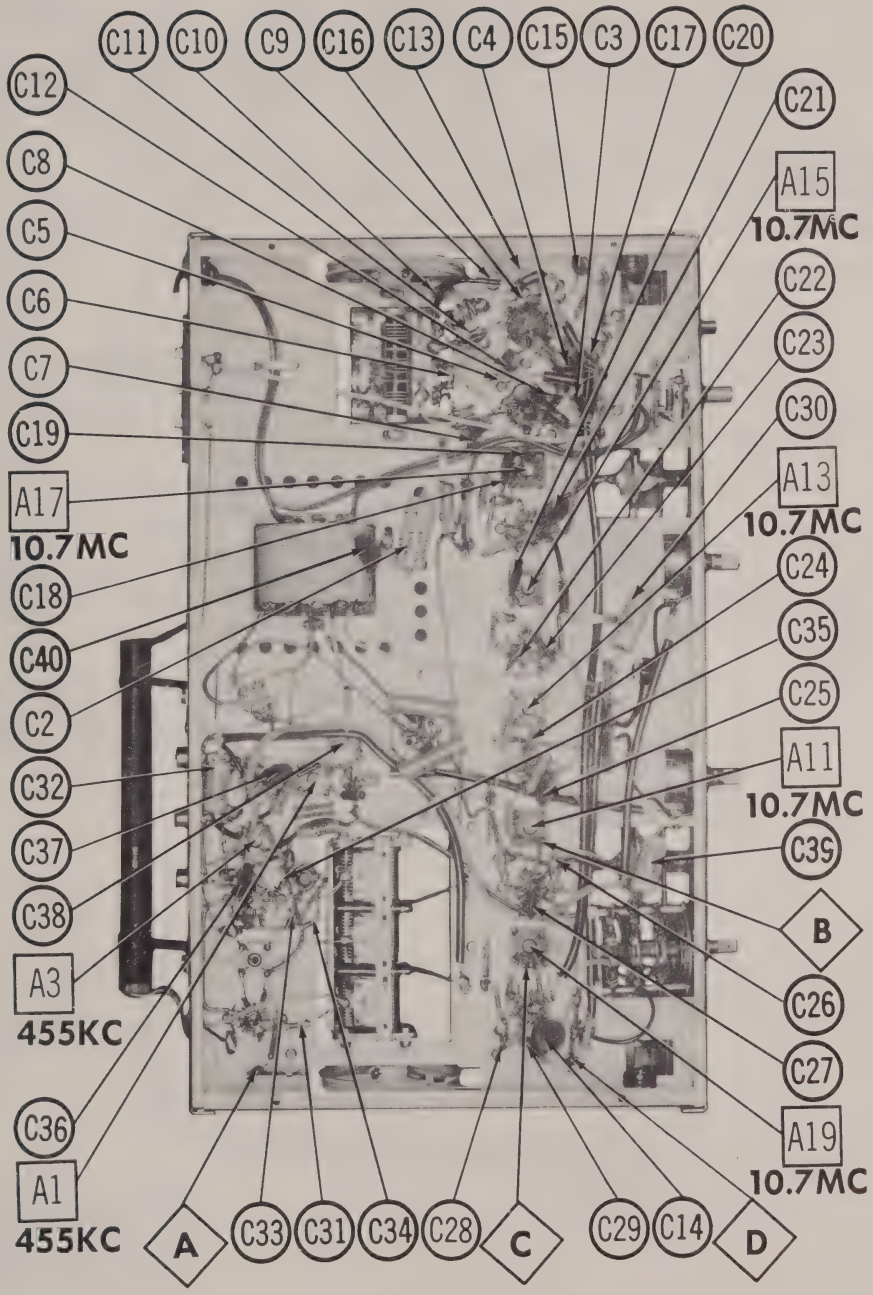
LAFAYETTE
MODEL LT-77

LAFAYETTE
MODEL LT-77

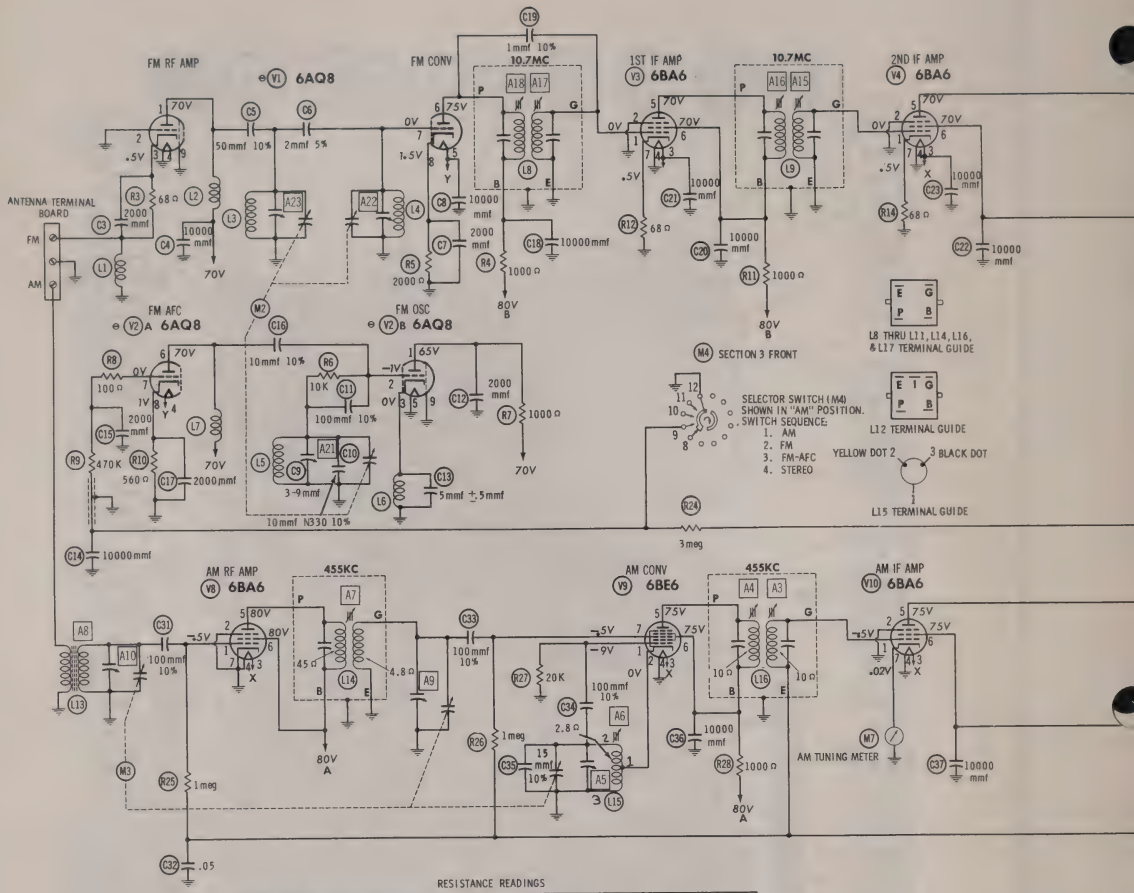
SET 532 FOLDER 7



CHASSIS BOTTOM VIEW-RESISTOR, INDUCTOR & MISC. IDENT.



CHASSIS BOTTOM VIEW-ALIGNMENT & CAPACITOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8	†1400Ω	0Ω	68Ω	.1Ω	0Ω	†1400Ω	0Ω	2000Ω	0Ω
V2	6AQ8	†2400Ω	10Ω	0Ω	0Ω	.1Ω	†1400Ω	3.5meg ■470K	560Ω	0Ω
V3	6BA6	.3Ω	0Ω	0Ω	.1Ω	†1400Ω	†1400Ω	68Ω		
V4	6BA6	.3Ω	0Ω	0Ω	.1Ω	†1400Ω	†1400Ω	68Ω		
V5	6AU6	50K	0Ω	0Ω	.1Ω	†12K	†12K	0Ω		
V6	6AU6	50K	0Ω	0Ω	.1Ω	†10K	†10K	0Ω		
V7	6AL5	0Ω	80K	0Ω	.1Ω	200K	0Ω	80K		
V8	6BA6	3.1meg	0Ω	0Ω	.1Ω	†400Ω	†400Ω	0Ω		
V9	6BE6	20K	.4Ω	0Ω	.1Ω	†1400Ω	†1400Ω	3.1meg		
V10	6BA6	2.1meg	0Ω	0Ω	.1Ω	†1400Ω	†1400Ω	▲		
V11	6X4	120Ω	NC	0Ω	.1Ω	NC	115Ω	¶ 30K		

ALL MEASUREMENTS MADE IN "STEREO" POSITION WITH AFC ON UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "FM" POSITION.
▲ DO NOT MEASURE.
† MEASURED FROM PIN 7 OF V11
NC NO CONNECTION

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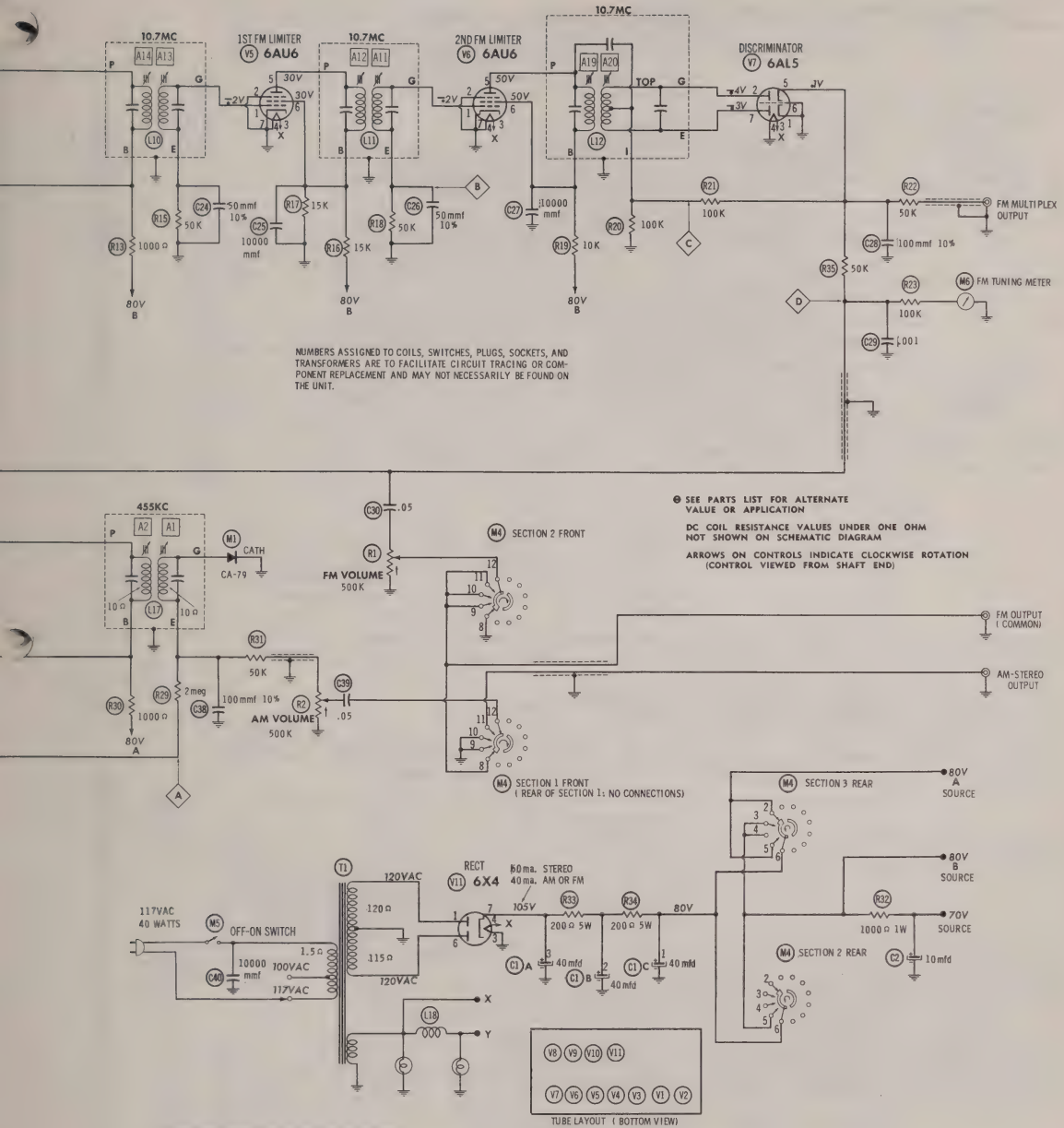


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

LAFAYETTE MODEL LT-77

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4, A6, A7, A11 thru A20. . . GENERAL CEMENT #8721, 8722
WALSCO #2519
A5, A9, A10, A21, A22, A23. . . . . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	(AM) Point of non-interference.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6, A7, A8	"
4.	"	1400KC	1400KC Signal.	"	A9, A10	Adjust for maximum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A11, A12, A13, A14, A15, A16, A17, A18	Adjust for maximum deflection.
6.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A19	"
7.	"	"	"	DC probe to point (D). Common to chassis.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point (B). Low side to chassis.	A11, A12, A13, A14, A15, A16, A17, A18	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. thru 47K to point (C). Low side to chassis.	A19	"
7.	"	"	"	Vert. amp. to point (D). Low side to chassis.	A20	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A19 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	(FM) 108MC	DC probe to point (B). Common to chassis.	A21, A22, A23	Adjust for maximum deflection.
9.	"	88MC	88MC	"	L5, L4, L3	"

FIG. 1

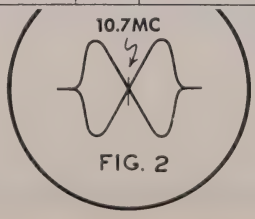


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -Mixer	6AQ8 (ECC85) *	V7	Discriminator	6AL5
V2	FM Osc. - AFC	6AQ8 (ECC85) *	V8	AM RF Amplifier	6BA6
V3	1st FM IF Amplifier	6BA6	V9	AM Converter	6BE6
V4	2nd FM IF Amplifier	6BA6	V10	AM IF Amplifier	6BA6
V5	1st FM Limiter	6AU6	V11	Rectifier	6X4
V6	2nd FM Limiter	6AU6			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	③40	150		AFH3-10	C0090	FP311.5	TMT-3127	TVL-3442	
B	②40	150							
C	①40	150							
C2	10	150		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	

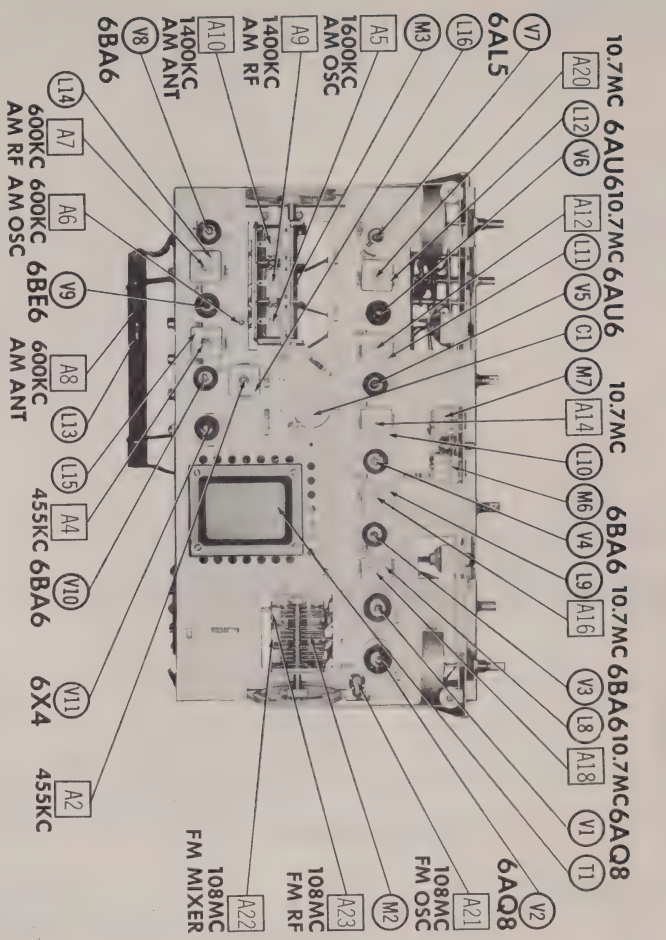
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	50 10%		NPO-SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C6	2 5%		NPO-SI 2.0	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	3-9			829-10				
C10	10 N330 10%			TCA-10		*		10TCS-Q10
C11	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C12	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	5 +.5mmf		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C16	10 10%		NPO-SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C17	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	50 10%		NPO-SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	50 10%		NPO-SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C29	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C30	.05 400V		P488N-05	DD-503	CUB6S5	4DP-3-503	GEM-415	4TM-S50
C31	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C32	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C33	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C34	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C35	15 10%		NPO-SI 15	D6-150	L10Q15	CCD-150	GP415	10TS-Q15
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C39	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½		AB-60				Volume, FM
B	Shaft			AK-29				
R2A	500K	½		AB-60				Volume, AM
B	Shaft			AK-29				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	68Ω				R20	100K			
R4	1000Ω				R21	100K			
R5	2000Ω				R22	50K			
R6	10K				R23	100K			
R7	1000Ω				R24	3meg			
R8	100Ω				R25	1meg			
R9	470K				R26	1meg			
R10	560Ω				R27	20K			
R11	1000Ω				R28	1000Ω			
R12	68Ω				R29	2meg			
R13	1000Ω				R30	1000Ω			
R14	68Ω				R31	50K			
R15	50K				R32	1000Ω 1W			
R16	15K				R33	200Ω 5W	PW5-200	5W-SQ-200	
R17	15K				R34	200Ω 5W	PW5-200	5W-SQ-200	
R18	50K				R35	50K			
R19	10K								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		LAFAYETTE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L2	RF Choke (3uh)		BC-564	4608	RTC-8518	T858	
L3	FM RF						
L4	FM Mixer Grid						
L5	FM Osc.						
L6	RF Choke (3uh)		BC-564	4608	RTC-8518	T858	
L7	RF Choke (3uh)		BC-564	4608	RTC-8518	T858	
L8	1st FM IF		FM-256	1463-PC	RTC-9046		
L9	2nd FM IF		FM-256	1463-PC	RTC-9046		
L10	3rd FM IF		FM-256	1463-PC	RTC-9046		
L11	Limiter		FM-256	1463-PC	RTC-9046		
L12	Discriminator			1464-PC	RTC-9050		
L13	Loopstick		BC-419	705-A		T523	
L14	AM RF						
L15	AM Osc.		BC-393	69-OSC	RTC-8646	T503	
L16	1st AM IF		BC-356	13-PC1	RTC-8641	T614	
L17	2nd AM IF		BC-357	13-PC2	RTC-8642	T615	
L18	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	LAFAYETTE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .37A Tap @ 100V (Not Used)	240VCT @ .060A DC	6.3V @ 4A						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1	CA-79			1N60	1N60	AM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M2	Tuning Cap		FM, 3 Gang
M3	Tuning Cap.		AM, 3 Gang (Ant. 45—500mmf, RF 38—490mmf, Osc. 29—225mmf)
M4	Switch		Function Selector, (Rotary Type)
M5	Switch		Power Off-On
M6	Meter		FM
M7	Meter		AM

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

MIRACORD
MODEL 90

MIRACORD
MODEL 90

MIRACORD
MODEL 90

GENERAL INFORMATION

The Elac Miracord 90 is a four-speed record changer or player. It can be used as an automatic record changer when the large spindle is used, or as a single record player when the small spindle is used.

When using the Elac Miracord 90 as an automatic changer, a stack of records up to 7/8" in height may be placed on the spindle, and after the last record has been played, the changer will automatically shut off.

Records of 7", 10", and 12" diameter may be intermixed and the changer will automatically shut off when the last record is played. When the record changer is being used as a record player, the changer will automatically shut off after playing a record.

This changer is to be connected to a 110-120 volt AC supply.

Supplied By:

Benjamin Electronic Sound Corp.
97-03 43rd Avenue
Corona 68, New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

CQ476

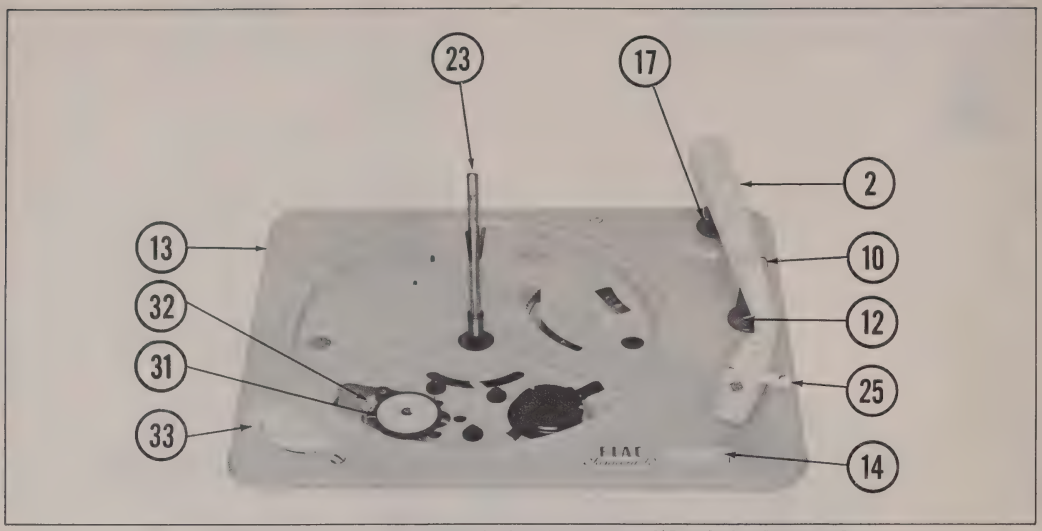


FIG.1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

PREPARING FOR OPERATION

1. Turn the shipping screws all the way down so the changer will float freely.
2. Level the changer.
3. Insert one of the two spindles into the center hole of the turntable.

OPERATING INSTRUCTIONS

Speed Selector

Set the speed selector to the speed of the records being played, 16, 33, 45, or 78. The 0 position on the speed selector is the position where the idler wheel is disengaged from the turntable rim and the stepped motor shaft. It is the position the changer should be left in when not in use to prevent flat spots from developing on the idler wheel.

Start

To start the changer, depress the start button and release. Power to the motor will be switched on and the changer will go through a change cycle so a record will be dropped onto the turntable. The tone arm will scan the record so it will set down in the proper place.

Loading

A stack of records up to 7/ 8" in height can be placed on the spindle when the changer is being used as an automatic record changer. The records can be intermixed as long as they are of the same speed.

Rejecting

A record may be rejected at any time by depressing the start button.

CHANGE CYCLE

As the tone arm enters the lead-out groove of a record, the faster swing of the tone arm causes the steering lever (45) to press against the recoil lever (62) which moves the change lever (61), which is connected to the recoil lever (62) by a clutch, and directs the nylon nose (84) close to the projection on the turntable hub. The projection on the turntable hub seizes the change lever (61), pushes it against a cam on the cycling cam (71), and moves it so the intermediate pinion (82) engages the teeth of cycling cam (71).

As the cycling cam (71) rotates, the tone arm is raised from the record by action of the tone arm rocker (54). The tracer pin (57A) follows the groove in the cycling cam (71) and the tone arm will move like a pendulum. If there are records on the spindle, the feeler on the tone arm head will contact the edge of the bottom record with a slight pressure. Lever (43) will shift toward the tone arm axle and lever (40) and the tone arm will swing outward. After the record has been dropped, the tone arm is guided in by the tracer pin (57A), following the groove in the cycling cam (71), and sets down on the lead-in groove of the record due to the backstroke of the tone arm rocker.

The records are dropped onto the turntable in the following manner: The top cap of the spindle is drawn down by a slight tension of the dropping lever exerted on the pull rod of the spindle, and presses the bottom record of the stack onto the three resilient supports.

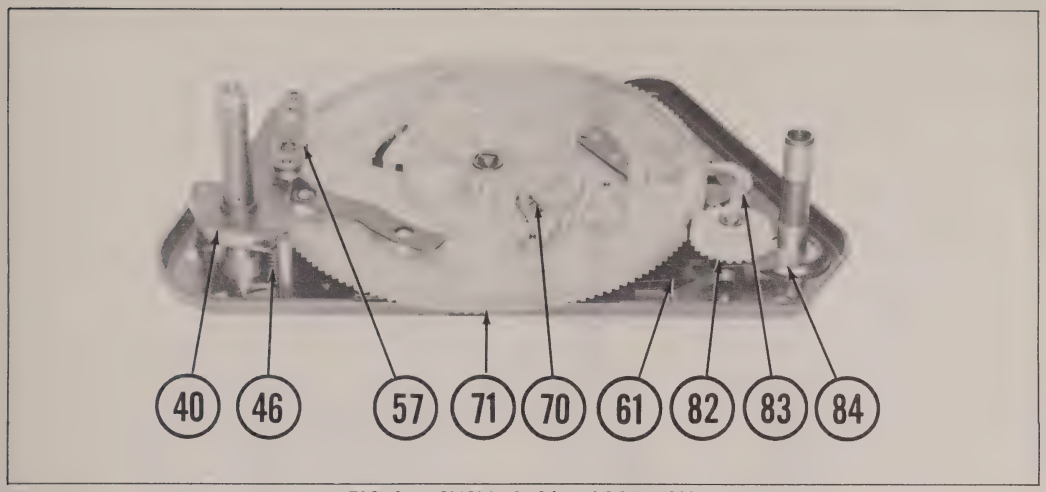


FIG.2 CYCLING CAM ASSEMBLY

As the cycling cam (71) continues to rotate, more tension is applied to the dropping lever and the pull rod in the spindle releases the blocking segment which causes the spring rim, which holds the records, to expand and hold all the records except the bottom one. The three resilient supports are then retracted, and the bottom record falls onto the turntable.

Further rotation of the cycling cam (71) causes the tension on the dropping lever to be released. The three resilient supports are extended and the rim of the expansion spring is retracted. The records will slide down the spindle one record thickness for the next record drop.

Automatic Shut-Off

After the last record has been played, the changer starts through the change cycle. The feeler on top of the tone arm does not find a record as the tracer pin (57A) tracks all switch tongues and is led into the end groove of the cycling cam (71) which prevents the tone arm from swinging inward.

The tone arm is lowered by means of the raising pin (63) on the tone arm rocker and sets down on its support, pressing the ram down, and opening the switch cutting the power to the motor.

ADJUSTMENTS

Height

There should be a clearance of 2.3" between the top surface of the feeler and top surface of the turntable with the rubber mat removed.

To obtain this clearance, unlock nuts (56) and tighten them until the required clearance is obtained. Relock nuts (56).

Set-Down

The distance between the sapphire stylus and the center of the turntable must be 6.9" measured with the tone arm in its extreme right position.

To adjust, loosen screw (7) and twist the tone arm on the tone arm axle and lever (40). The headless screws in the lever segment must touch the lug. Tighten screw (7).

Tracer Pin

Rotate the turntable by hand through all the scanning positions of the tone arm until the idler wheel is situated in the tooth gap. In this position, the tracer pin (57A) must be in the brake tongue in the cycling cam (71), and the tracer rocker (57) must be in the center of the notch. Turn screw on the tracer pin rocker (57) to adjust this position.

Next, turn the cycling cam to feeler position. The screw must not contact the lever below it. Lock the screw with varnish.

Dropping Lever

1. Insert spindle (23) in the cycling cam.
2. Rotate the turntable until the tone arm is in the tracing position.
3. Adjust the release rocker (87) by adjusting nut (76) until the three resilient supports in the spindle can be compressed by a slight pressure of the fingers.
4. Turn adjusting nut (76) clockwise until the three resilient supports can no longer be compressed.
5. Lock adjusting nut (76) in position with the counter nut (77) below it.

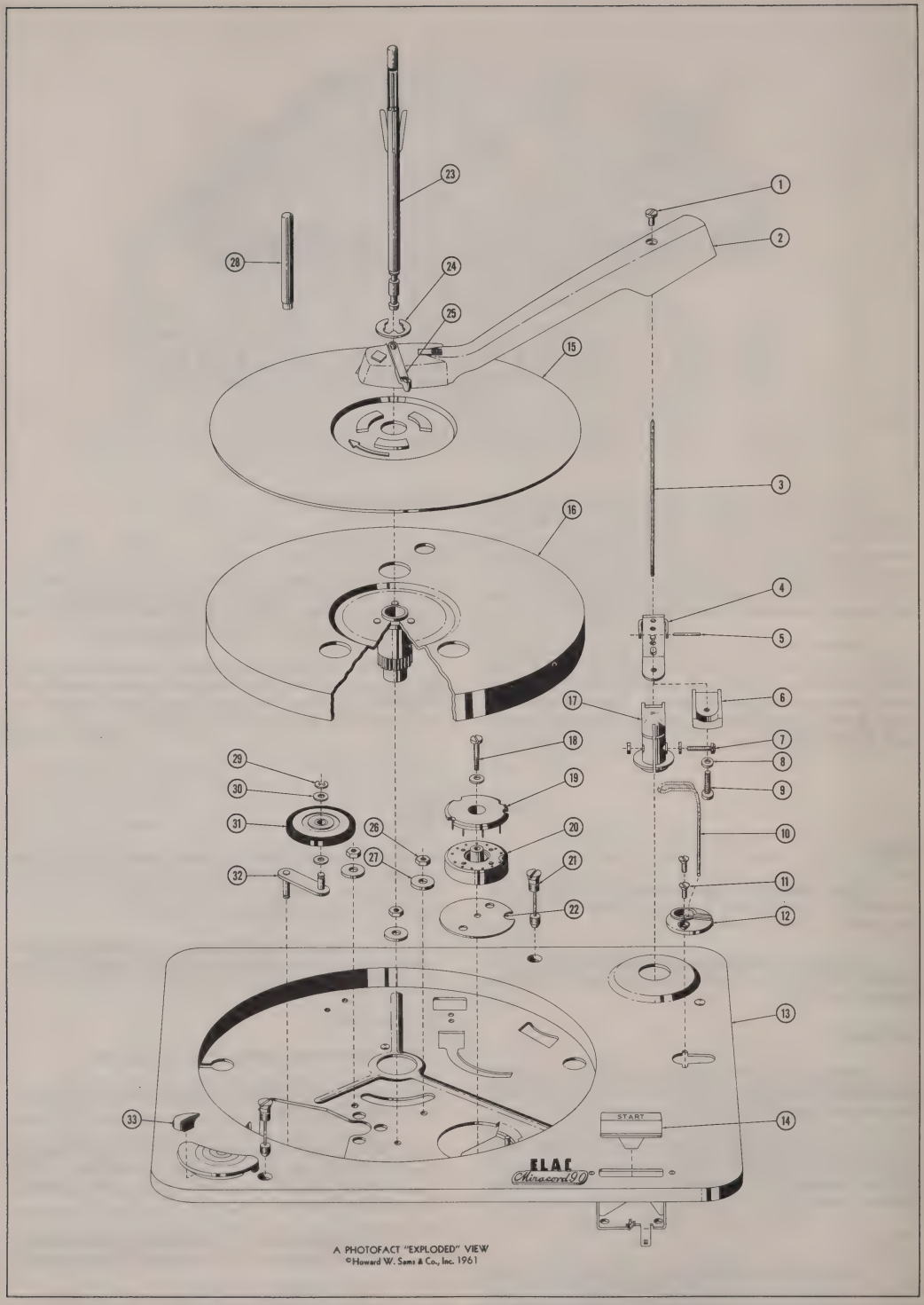


FIG.3A · EXPLODED VIEW OF PARTS ABOVE BASE PLATE

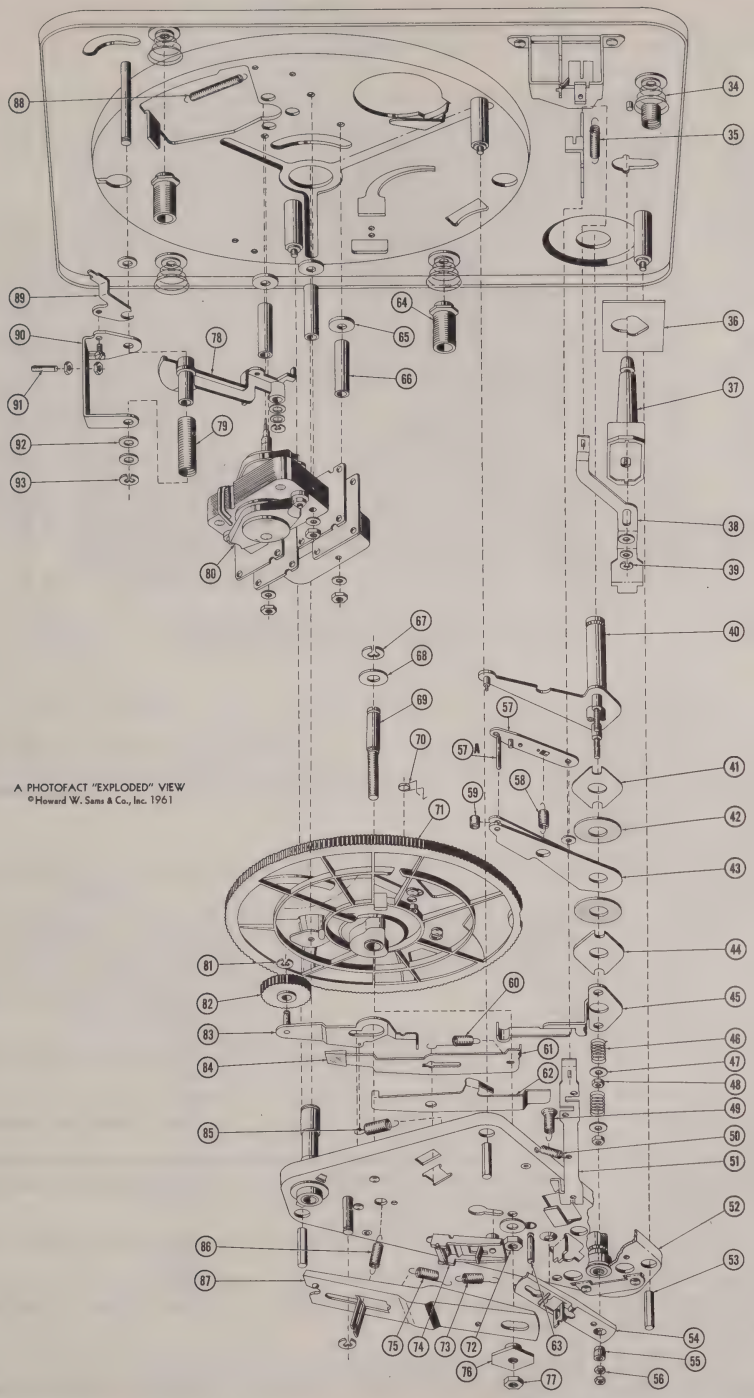


FIG. 3 B EXPLODED VIEW OF PARTS BELOW BASE PLATE

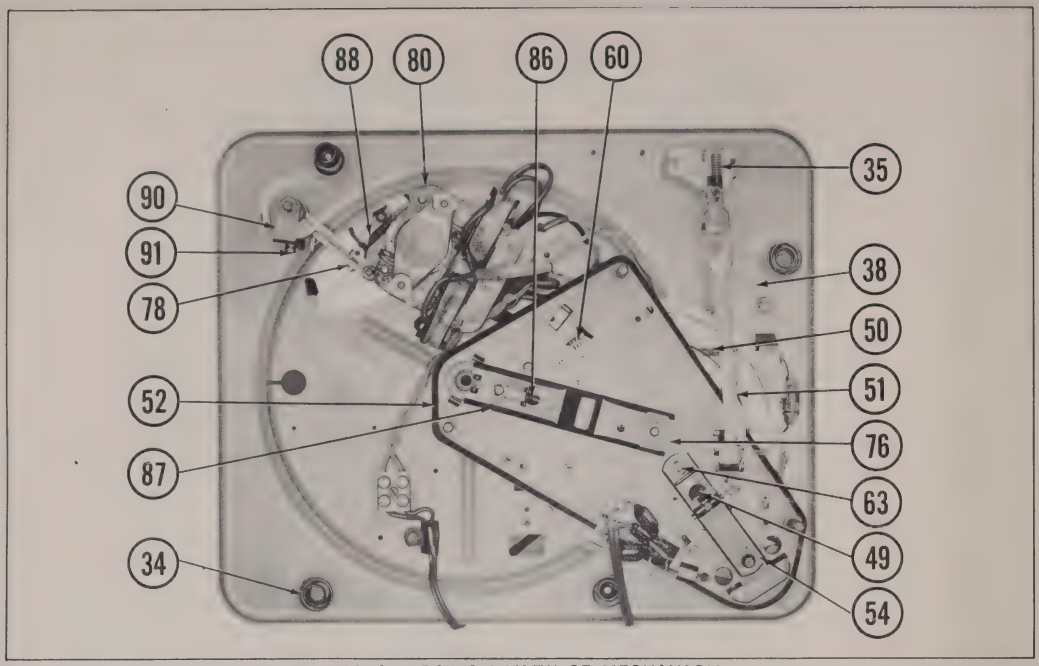


FIG.4 BOTTOM VIEW OF MECHANISM

CLEANING

Clean the idler wheel tire and inside of turntable rim with alcohol. When the changer is disassembled, clean all parts and lubricate.

LUBRICATION

Lubricate the turntable ball bearing with a good grease. Lubricate all sliding parts, bearings, and bushings with a good grade of light motor oil.

TROUBLE CHART

Symptom	Cause	Remedy
Changer will not start.	1. Defective motor (80). 2. Start lever (51) out of adjustment.	1. Replace motor (80). 2. Springs (35) and (50) broken or disconnected and will not permit the start lever (51) to engage the cycling cam.
Tone arm does not scan 7" or 12" records.	1. Tone arm twisted on its axle.	1. See "Set-Down Adjustment".
Stylus jumps out of groove.	1. Tracer pin (57A) too close to cycling cam.	1. See "Tracer Pin Adjustment".
Turntable does not rotate.	1. Pivot lever (78) is locked so the idler wheel does not contact the inner rim of the turntable. 2. Idler wheel (31) or inner rim of turntable oily.	1. Adjust pin (91) to free pivot lever (78). 2. Clean with alcohol using a soft cloth.
Tone arm jumps in starting groove of record when landing.	1. Tracer pin (57A) out of adjustment.	1. See "Tracer Pin Adjustment".
Noise in loudspeaker during change cycle.	1. Contacts not closed on muting switch.	1. Realign contacts on muting switch
	1. Records slide on each other.	1. Remove faulty record.

Symptom	Cause	Remedy
	2. Idler wheel (31) not engaging stepped pulley correctly or rubber tire of idler wheel oily.	2. Adjust idler wheel (31) so it is horizontal and of proper height to the stepped pulley. Clean oil from the inner rim of the turntable, stepped pulley, and rubber tire of idler wheel.
Records do not drop.	1. Records damaged. 2. Spindle (23) defective. 3. Release rocker (87) locked. 4. Dropping lever out of adjustment.	1. Replace records. 2. Replace spindle (23). 3. Replace tension spring (86). 4. See "Dropping Lever" under "Adjustments.
Rumble	1. Idler wheel (31) tire defective. 2. Idler wheel (31) tire dirty.	1. Replace idler wheel (31). 2. Clean with alcohol or replace idler wheel (31).
Tone arm raises before tracking the last music groove.	1. Defective record.	1. Replace record.
Tone arm does not raise but moves back and forth in end groove.	1. Change lever (61) not moved back. 2. Change lever (61) thrown off during change cycle.	1. Replace tension spring (60). 2. Replace change lever (61). Check clutch between change lever (61) and recoil lever (62). Replace clutch if necessary.
Tone arm is not raised high enough to contact the bottom record of the stack.	1. Height of tone arm misadjusted.	1. See "Height Adjustment".
Shrill or shrieking noise during reproduction.	1. Cartridge defective. 2. Stylus worn.	1. Replace cartridge. 2. Replace stylus.
Tone arm lands too far in or out.	1. Feeler position misadjusted.	1. Remove the cartridge and shift the feeler inward if the landing point should be shifted outward and shift feeler outward if landing point should be shifted inward.
Unit changes continuously.	1. Recoil spring (60) for change lever (61) raised too high, preventing change lever (61) to move inward. 2. Nylon tip of change lever (61) frayed, due to the edge of the projection of the turntable pinion.	1. Bend the recoil spring (60) back until the nylon tip of change lever (61) is 3/32" away from the rubber gasket when the change lever (61) contacts the spring. 2. Remove the frayed edges of the nylon tip or install a new change lever (61). Remove the burrs from the edge of the projection of the turntable pinion.
Records drop before the tone arm has returned to its extreme right.	1. Tone arm shifted on its axle. 2. Dropping lever out of adjustment.	1. Remove grease from the tone arm axle. Turn the tone arm bearing clockwise to the stop dog. Loosen screw (7) and turn the tone socket on its axle so the cavity in the tone arm will set down on its support when lowered. Adjust pull rod (3) by nuts (56) so that the feeler is 2 5/16" above the record surface when the tone arm is raised. 2. Loosen nut (77) on release rocker (87) so when in the initial stress, the three resilient supports in the spindle can be compressed by hand.

MECHANICAL PARTS LIST

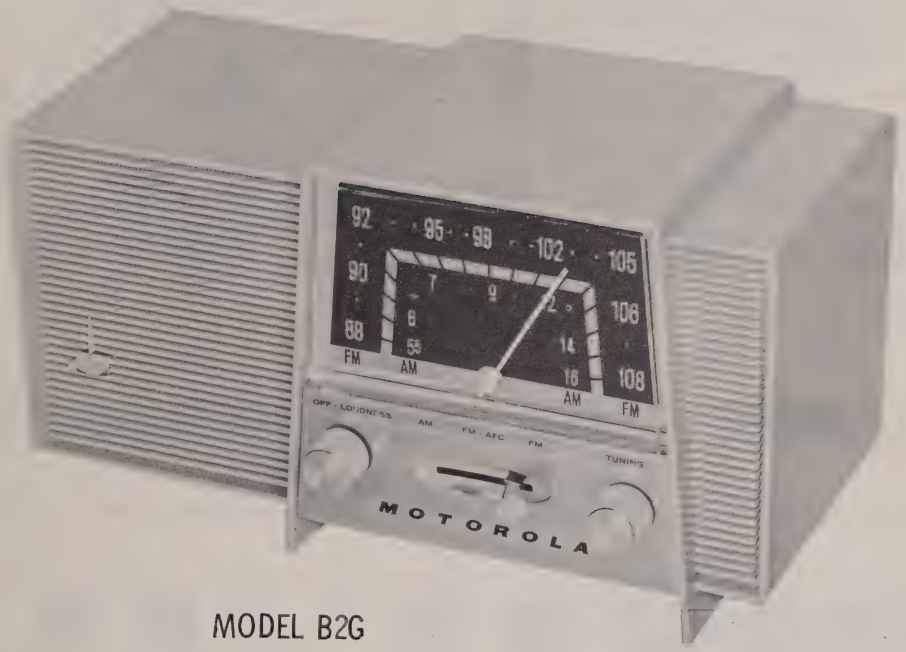
Ref No.	Part No.	Description
1	AM3X6DIN91St	Oval-Head Countersunk Screw
2	10-140SK36	Tone Arm TA18-Indicate Color
3	10-066-37	Pull-Rod
4	10-066-304	Bracket
5	10-066-36	Bearing Bolt
6	10-066-322	Weight
7	M3X15DIN9338G	Hexagon Hd. Screw with Nut
8		Washer
9	BM3X15DIN7513St	Cylindrical Tapping Screw
10	10-066-185	Wire Clip
11	AM3X10DIN91St	Oval-Hd. Countersunk Screws
12	10-066-184	Cover-Indicate Color
13	10-066U83	Mounting Base-Indicate Color
14	10-066-65	Start Button-Indicate Color
15	10-066-202	Rubber Mat
16	10-066U122	Turntable Complete-Indicate Color
17	10-066-33	Tone Arm Support-Indicate Color
18		Voltage Selector Screw
19	Part of Ref. 20	Voltage Selector Cap with Pins
20	90-182(4) A	Voltage Selector-Elac
	90-182(4) C	Voltage Selector-AGA
21	10-066-256	Screws
22	Part of Ref. 20	Insulating Plate
23	10-067	Record Spindle SA 72
24	10-027-101	Lock Washer
25	10-140U4	Feeler Complete
26	M4DIN934St	Hexagon Nuts with Screws
27		Washers
28	10-066-72	Single Play Spindle
29	3.2DIN6799	Lock Washer
30	8/4.3X.5WN2311	Teflon Washer
31	10-038U73	Idler Wheel Complete
32	10-066U85	Lever Link
33	10-066U86	Handle Complete-Indicate Color (Includes Item 89)
34	10-066-254	Truncated Cone Spring
35	10-066-264	Tension Spring
36	10-066-250	Insulating Plate
37	90-262(4)ASK1	Switch Elac
	90-262(4)BSK1	Switch AGA
38	10-066U107	Start Lever
39	2.3DIN6799	Lock Washer
40		Tone Arm Axle and Lever
41		Top Clutch Plate
42		Cork Disc
43		Tracer Pin Lever
44		Bottom Clutch Plate
45		Steering Lever
46		Compression Spring
47		Metal Washer

Ref No.	Part No.	Description
48		Hexagon Nut
49	10-066-16	Tension Spring
50	10-066-177	Tension Spring
51	10-066-54	Start Lever II
52	10-066U13	Gear Plate Complete
53	10-066-321	Supports
54	10-066-40	Tone Arm Rocker
55	10-066-38	Setting Ring
56	M2DIN934St	Hexagon Nut
57		Tracer Pin Rocker
57A	10-066-296	Tracer Pin
58		Tension Spring
59		Compression Spring
60	10-066-194	Tension Spring
61	10-066U80	Change Lever
62	10-066-61	Recoil Lever
63	10-066U44	Raising Pin
64	10-066-256	Screw
65		Washer
66		Motor Spacer
67	5DIN6799	Lock Washer
68	10-025-52	Washer
69	10-066-183	Axle
70		Spring
71	10-066U118	Cycling Cam Complete
72	5.3DIN433St	Hexagon Nut
73	10-066-163	Tension Spring
74	10-066U32	Roll Holder Complete
75	10-066-163	Tension Spring
76	10-066-182	Lock Washer
77	BM5DIN439St	Hexagon Nut
78	10-066-219	Pivot Lever
79	10-066-226	Compression Spring
80	10-075SK3	MOW9 Motor with 50 cps Step Pulley
	10-075SK4	MOW9 Motor with 60 cps Step Pulley
81		Lock Washer
82	10-066-13	Intermediate Pinion
83	10-066U63	Rocker Arm
84		Nylon Tip
85	10-066-265	Tension Spring
86	10-066-163	Tension Spring
87	10-066U40	Release Rocker
88	10-066-225	Tension Spring
89	10-066U86	Handle Complete-Indicate Color (Includes Item 33)
90	10-066-222	Bracket
91	10-079-9	Pin
92	5.3DIN433	Washer
93	4DIN6799	Lock Washer

PHOTOFACT® Folder with CIRCUITRACE®

MOTOROLA MODELS B2G, N, W (Ch. HS-820)

MOTOROLA MODELS
B2G, N, W (Ch. HS-820)



MODEL B2G

MOTOROLA MODELS
B2G, N, W (Ch. HS-820)

TRADE NAME	Motorola Models B2G, B2N, B2W (Ch. HS-820)		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	AC - DC Operated 7 Tube FM-AM Receiver		
POWER SUPPLY	110 — 120 Volts AC-DC	RATING	28 Watts, .3 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 — 1620KC	FREQ. MOD.	88 — 108MC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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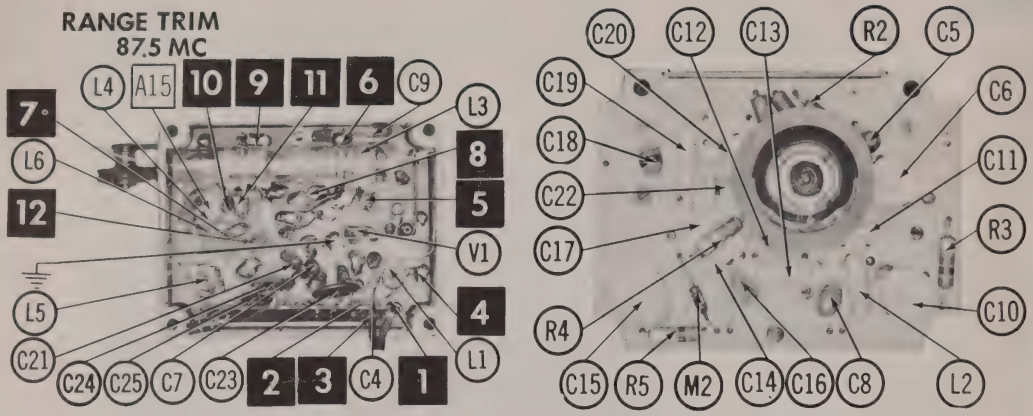

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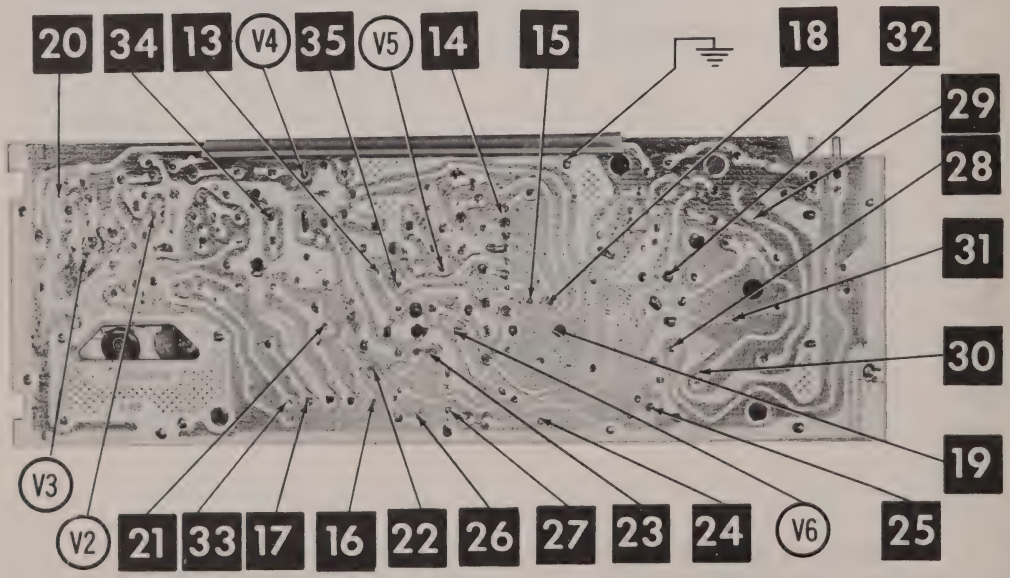
FM RF SUBCHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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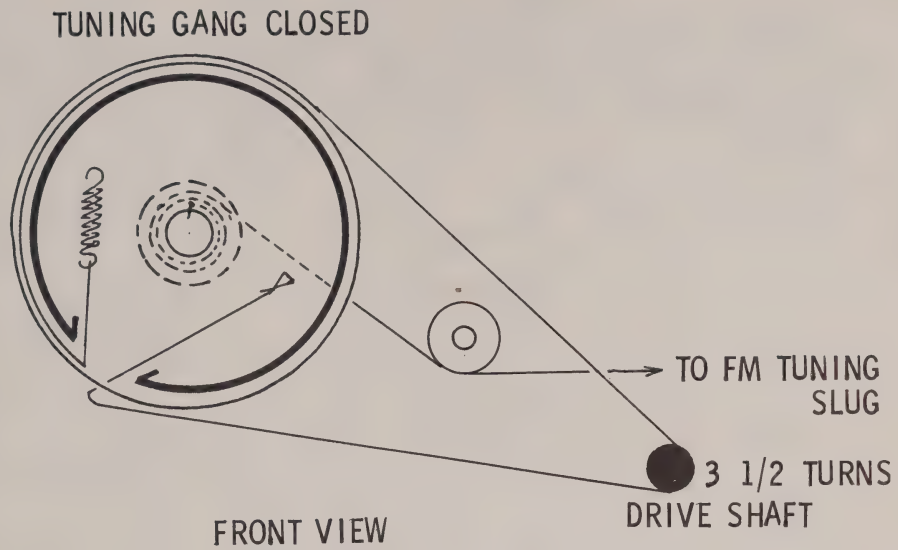
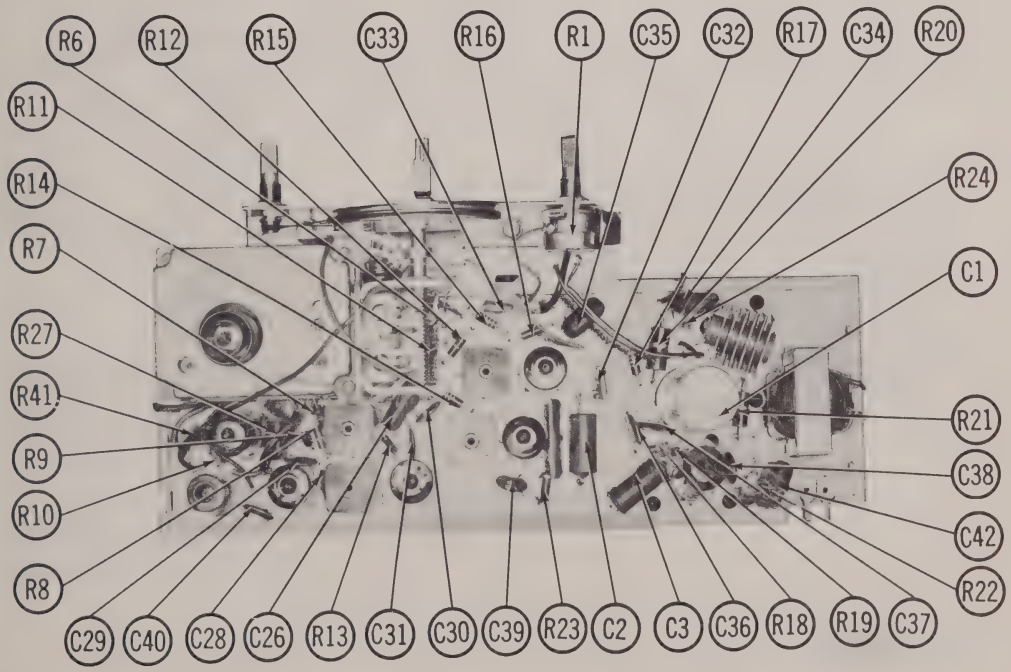
PRINTED BOARD

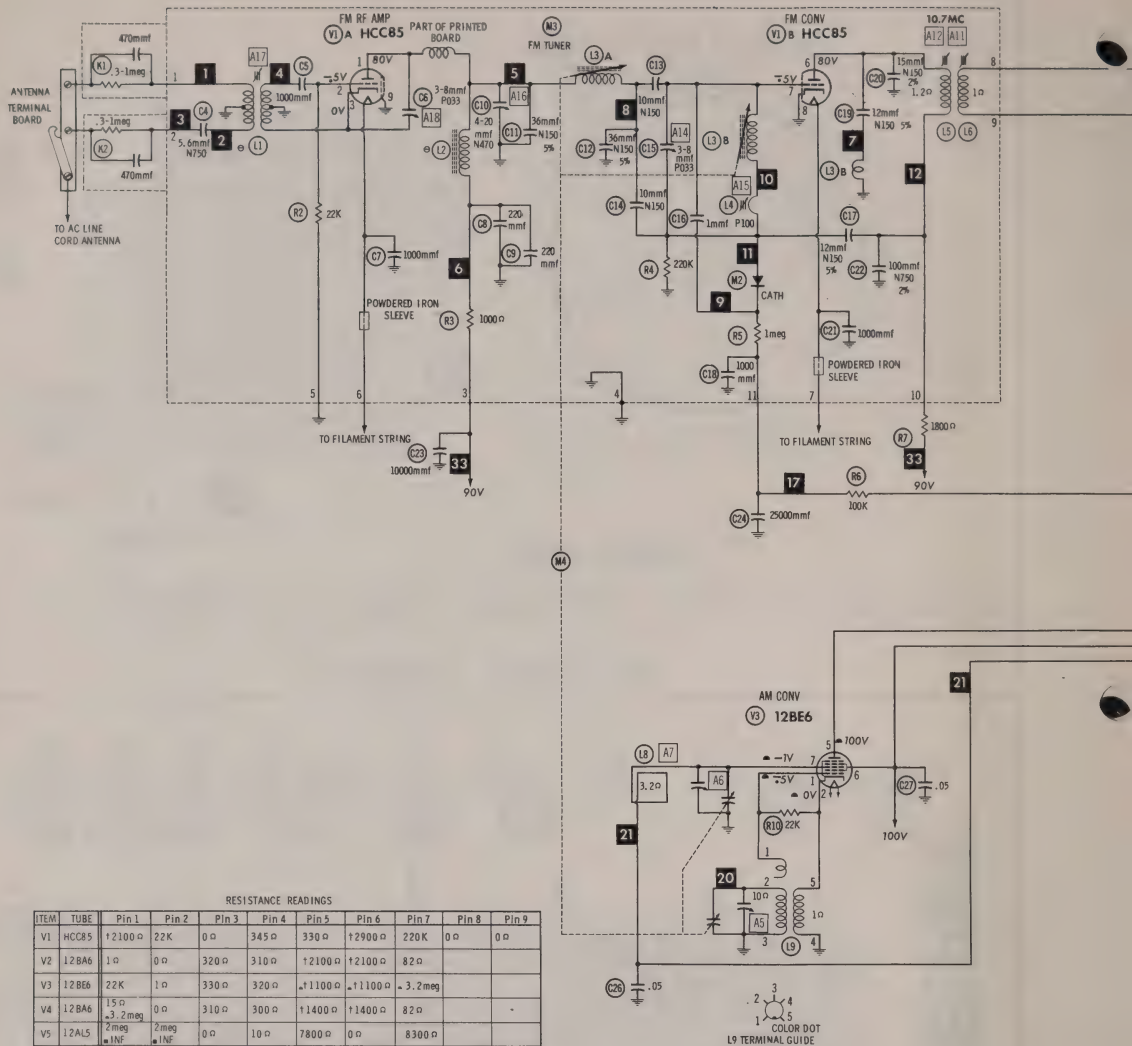
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



DRIVE CORD STRINGING



CHASSIS-BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	HCC85	↑2100Ω	22K	0Ω	345Ω	330Ω	↑2900Ω	220K	0Ω	0Ω
V2	12BA6	1Ω	0Ω	320Ω	310Ω	↑2100Ω	↑2100Ω	82Ω		
V3	12BE6	22K	1Ω	330Ω	320Ω	▲↑1100Ω	▲↑1100Ω	▲3.2meg		
V4	12BA6	15Ω ▲3.2meg	0Ω	310Ω	300Ω	▲↑1400Ω	▲↑1400Ω	82Ω		-
V5	12AL5	2meg ■INF	2meg ■INF	0Ω	10Ω	7800Ω	0Ω	8300Ω		
V6	12AV6	6.8meg	0Ω	285Ω	300Ω	0Ω	▲1meg	↑470K		
V7	35C5	150Ω	470K	345Ω	400Ω	NC	↑1100Ω	↑300Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
■ MEASURED WITH "AFC" OFF.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE™

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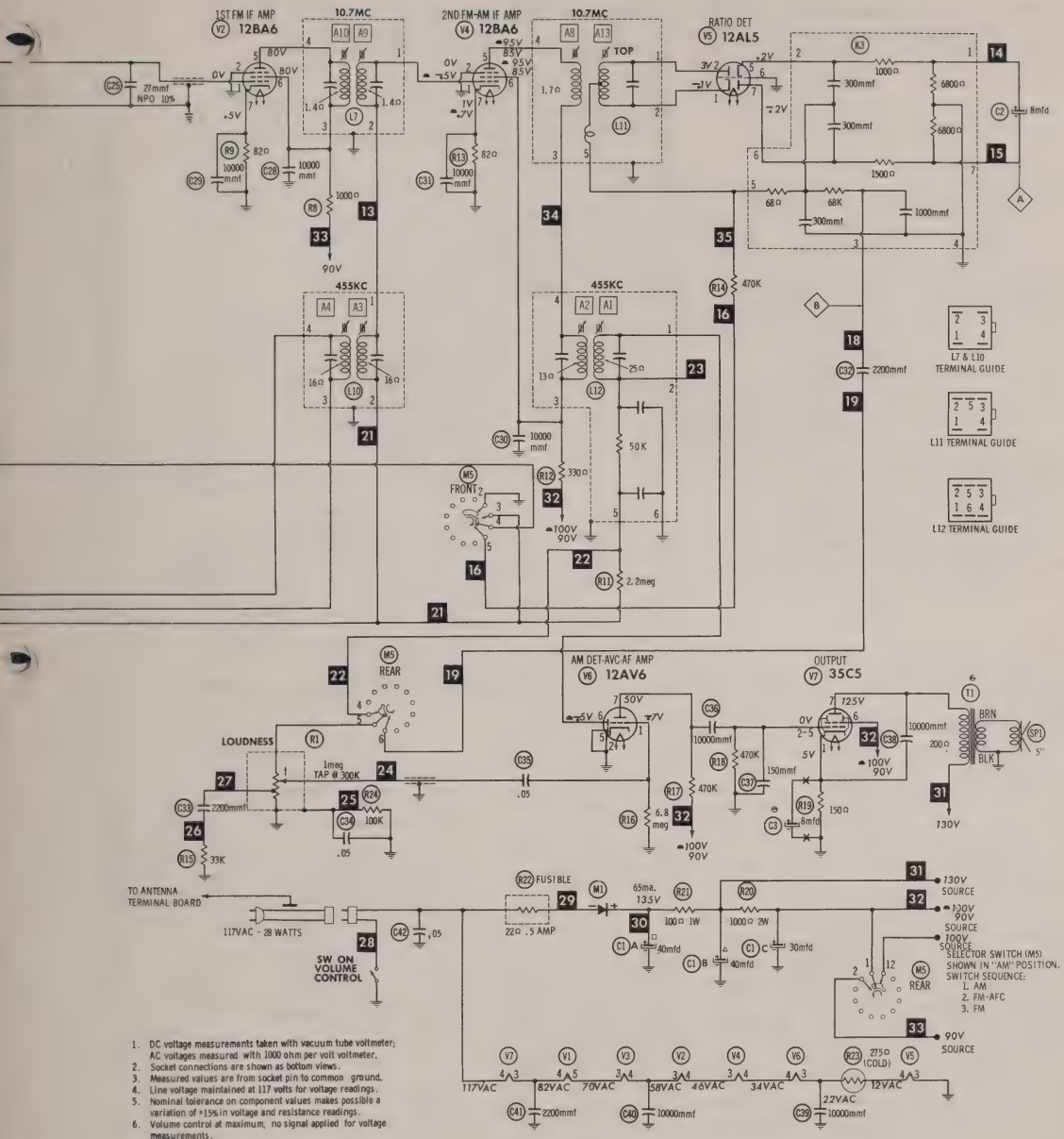


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

MOTOROLA MODELS
B2G, N, W (Ch. HS-820)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A4, A8, A9, A10, A13..	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A5, A6.....	GENERAL CEMENT #5004, , 5008, 5009 WALSCO #2520
A11, A12, A17.....	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
A14, A15, A16, A18.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A6	"
4.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output. Repeat Step 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals A and B	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE–SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM antenna terminals A and B.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
6.	"	"	"	Vert. amp to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals A and B.	108.5MC (Unmod.)	(FM) High end stop.	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
8.	"	87.5MC	Low end stop.	"	A15	"
9.	"	94MC	94MC Signal.	"	A16	"
10.	"	90MC	90MC Signal.	"	A17	"
11.	If oscillations occur at any point along the dial, back A17 out of coil form and adjust A18 until oscillation ceases. Repeat steps 9 and 10.					

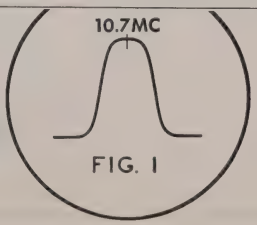


FIG. 1

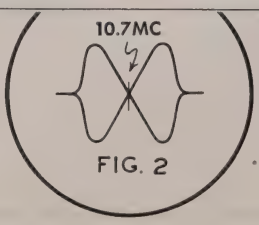


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	HCC85
V2	1st FM IF Amp.	12BA6
V3	AM Converter	12BE6
V4	2nd FM-AM IF Amp.	12BA6
V5	Ratio Detector	12AL5
V6	AM Det. -AVC-AF Amp.	12AV6
V7	Output	35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪40	150	23B639496	PWH3-11-30	C0090 †	PFP311.63	TMT-3127‡	PCL-3441.2	
B	▲40	150							
C	30	150							
C2	8	50	23A638536	PTT50008	NLW8-100	TT150X8	MLV10-50	TE-1303.3	
C3	8	50	23A638536	PTT50008	NLW8-100	TT150X8	MLV10-50	TE-1303.3	①

† Use printed circuit adapters #55277 & 55278.
‡ Use printed circuit adapter kit TMA.
① Not used in some versions.

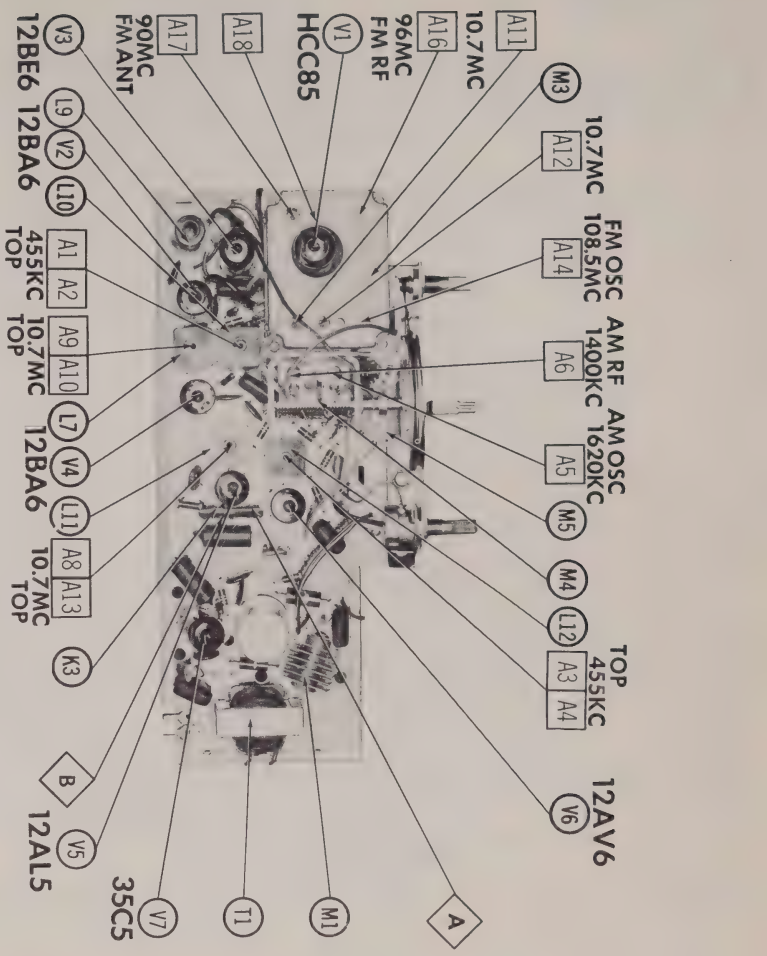
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	5.6 N750	#21K647194						
C5	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	3-8 P033	#20K646183						
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C9	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C10	4-20 N470	#20K646185				•		10TCP-Q39
C11	36 N150 5%	#21K646186				•		10TCP-Q39
C12	36 N150 5%	#21K646186				•		10TCP-Q10
C13	10 N150	#21K646187				•		10TCP-Q10
C14	10 N150	#21K646187						
C15	3-8 P033	#20K646183				•		
C16	1 P100	#21K646188						10TCP-Q12
C17	12 N150 5%	#21K646189	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	1000					•		10TCP-Q12
C19	12 N150 5%	#21K646189				•		
C20	15 N150 2%	#21K646190	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C21	1000			TCN-100				
C22	100 N750 2%	#21K646191	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000							5HK-S25
C24	25000	#21K740806	NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C25	27 NPO 10%		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C26	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C27	.05 400V		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C32	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C33	2200		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C34	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C35	.05 400V		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C37	150		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	10000		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C41	2200		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C42	.05 400V							

Motorola Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg 300K Tap	½	18B60185A01	BT-73	A47F-1meg	Q13-137X	UT-438	Loudness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	1000Ω			
R4	220K			
R5	1meg			
R6	100K			
R7	1800Ω			
R8	1000Ω			
R9	82Ω			
R10	22K			
R11	2.2meg			
R12	330Ω			
R13	82Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R14	470K			
R15	33K			
R16	6.8meg			
R17	470K			
R18	470K			
R19	150Ω			
R20	1000Ω 2W			
R21	100Ω 1W			
R22	22Ω, .5A			Pt.#65K647003
R23	275Ω Cold			Pt.#6B643916
R24	100K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Ant. Filter	470mmf, .3-1meg	51K754068	Centralab RC-471 Sprague AC1-1
K2	Ant. Filter	470mmf, .3-1meg	51K754068	Centralab RC-471 Sprague AC1-1
K3	Rat. Det. Network	(3) 300mmf, 1000mmf, 68Ω, 1000Ω, 1500Ω, (2) 6800Ω, 68K	51K647082	Aerovox PA-694 Centralab PC-342 Sprague C-12

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant.	24K646196					① Part #24D60282A03 used in Model B2N. Part #24D60282A01 used in Model B2W.
L2	RF Choke	24K646193					
L3A	FM RF	24K646194					
B	FM Osc.						
L4	Range Trimmer	3K646195					
L5	1st FM IF Prim.	1K646537					
L6	1st FM IF Sec.	1K646537					
L7	2nd FM IF	24K647049	FM-256	1463-PC	RTC-9046	T654	
L8	Loop Ant.	24D60282A02①					
L9	AM Osc.	24K647159					
L10	1st AM IF	24K647022	BC-356	13-PC1	RTC-8641	T614	
L11	Ratio Detector	24C647050	FM-257	1465-PC	RTC-9053	T659	
L12	2nd AM IF	24K647021					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	25C640766E ①	A-2928②	A-3876②	22S46 ②	S-1X ②	① Alternate Part #25C640766 ② Use original frame.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	50C6015A02	5A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MOTOROLA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.065A	48K646954 •	1N1763 ♦	150 •	SR200 ♦	• Selenium ♦ Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2		48K646192 •				• Part of M3

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	FM Tuner	77K647193	Complete, Less Tube
M4	Tuning Cap.	19B60154A01	2 Gang, AM
M5	Switch	40C60272A01	Function Selector (Lever Type)
	Printed Board	1V60036A20	Less All Components

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B60147A01	Tuning, Volume, Model B2G
Knob	36B60147A05	Tuning, Volume, Model B2N
Knob	36B60147A03	Tuning, Volume, Model B2W
Knob	36B60167A04	Function, Model B2G
Knob	36B60167A05	Function, Model B2N
Knob	36B60167A03	Function, Model B2W
Dial Crystal	61C60150A01	
Dial Pointer	1V60030A51	
Dial Scale	34C60181A01	
Cabinet	1V60030A49	Green, Model B2G (Includes Dial Scale and Medallion)
Cabinet	1V60030A50	Mocha, Model B2N (Includes Dial Scale and Medallion)
Cabinet	1V60030A48	White, Model B2W (Includes Dial Scale and Medallion)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

PHOTOFACT® Folder

OLSON MODEL AM-147 (ST-15)

OLSON MODEL
AM-147 (ST-15)

OLSON MODEL
AM-147 (ST-15)

TRADE NAME	Olson Model AM-147 (ST-15)
SUPPLIER	Olson Radio Corp., 260 S. Forge Street, Akron 8, Ohio
TYPE SET	AC Operated 8 Tube Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 50-60 Cycles RATING 90 Watts, .85 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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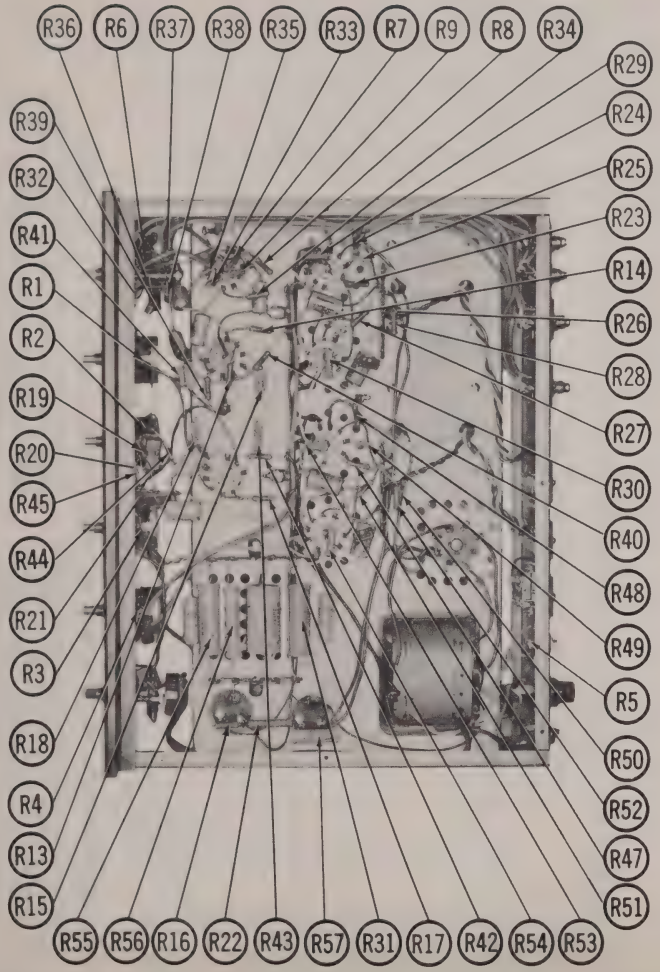
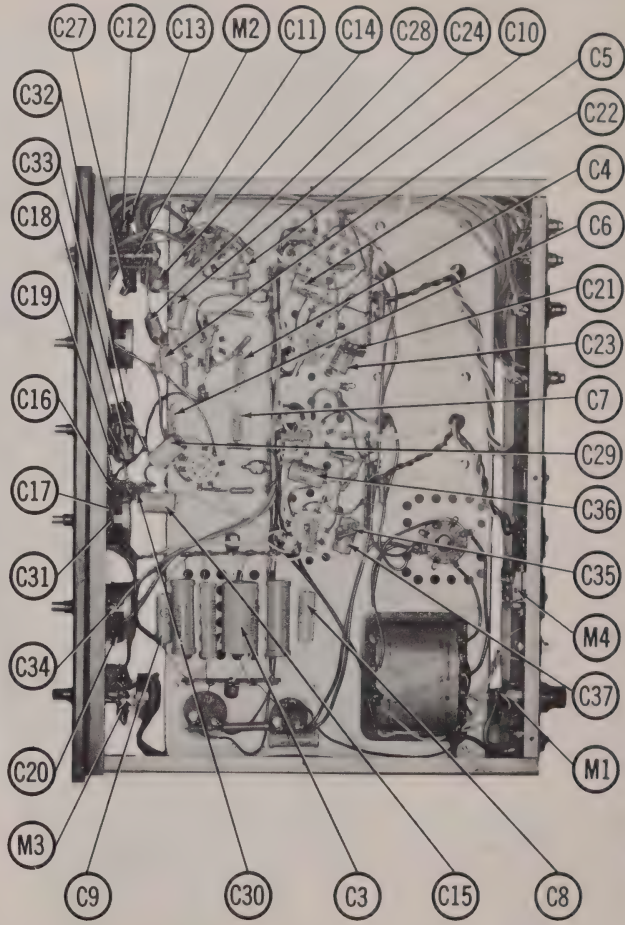
KV505



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



CHASSIS BOTTOM VIEW
CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Channel 1 Preamp. - Channel 2 Preamp.	12AX7 (ECC83) *
V2	Channel 1 Preamp. - Channel 2 Preamp.	12AX7 (ECC83) *
V3	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7 (ECC83) *
V4	Channel 1 AF Amp. - Channel 1 Output	6BM8
V5	Channel 1 Phase Inv. - Channel 1 Output	6BM8
V6	Channel 2 AF Amp. - Channel 2 Output	6BM8
V7	Channel 2 Phase Inv. - Channel 2 Output	6BM8
V8	Rectifier	5AR4 (GZ34) *

* Alternate

ELECTROLYTIC CAPACITORS

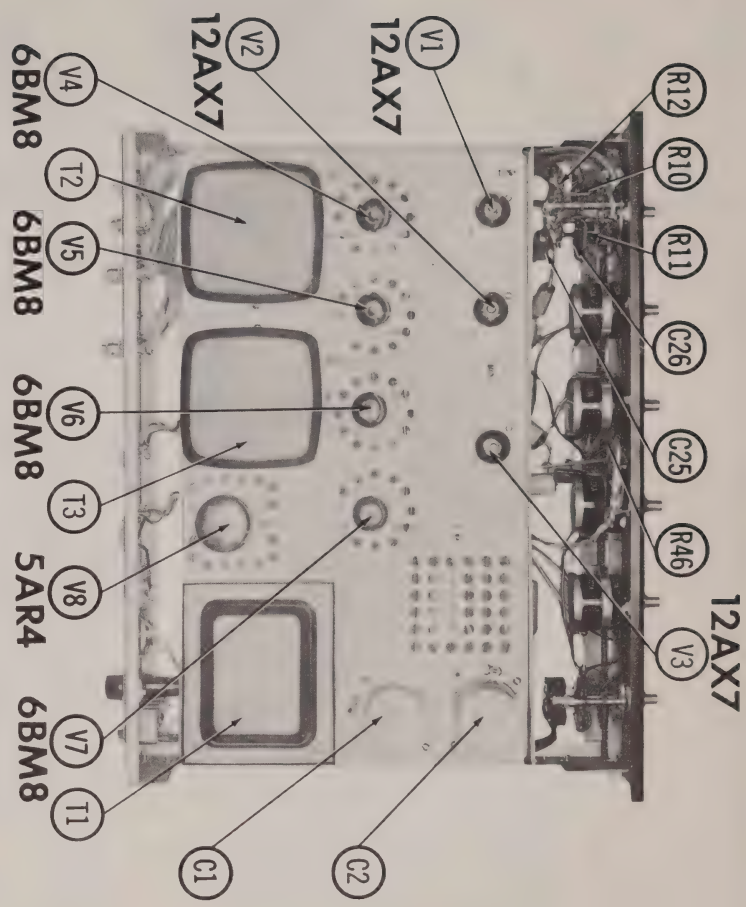
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	OLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	350		AFH2-59	XB0455	FP240	TMD-2655	TVL-2767	
B	50	350							
C2A	50	350		AFH2-59	XB0455	FP240	TMD-2655	TVL-2767	
B	50	350							
C3	60	150		PRS1490	BR6015	TC68	TD-60-250	TVA-1415	
C4	30	6		PTT-6030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C5	30	6		PTT-6030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C6	30	6		PTT-6030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C7	30	6		PTT-6030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C8	50	25		PTT-25050	NLW50-25	TC29	MLV50-25	TE-1209	
C9	50	25		PTT-25050	NLW50-25	TC29	MLV50-25	TE-1209	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C11	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C12	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C13	27 10%		1469-000027	TCZ-27	22R5Q27	CM-19B-270K	CNO-427	MS-427
C14	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C15	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C16	200 10%		1469-0002	TCZ-200	22R5T2	CM-19B-201K	MCB237	MS-32
C17	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C18	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C19	.02 500V		P688N-02	DD-203	CUB6S2	6DP-3-203	GEM-612	6TM-S20
C20	200 10%		1469-0002	TCZ-200	22R5T2	CM-19B-201K	MCB237	MS-32
C21	500 10%		1469-0005		5R5T5	CM-19B-501K	MCB245	MS-35
C22	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C23	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C24	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C25	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C26	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C27	27 10%		1469-000027	TCZ-27	22R5Q27	CM-19B-270K	CNO-427	MS-427
C28	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S20
C29	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C30	200 10%		1469-0002	TCZ-200	22R5T2	CM-19B-201K	MCB237	MS-32
C31	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C32	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C33	.02 500V		P688N-02	DD-203	CUB6S2	6DP-1-202	GEM-612	6TM-S20
C34	200 10%		1469-0002	TCZ-200	22R5T2	CM-19B-201K	MCB237	MS-32
C35	500 10%		1469-0005		5R5T5	CM-19B-501K	MCB245	MS-35
C36	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C37	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg			AB-70				Volume, Channel 1
B	1meg			SR-70				Volume, Channel 2
C	Shaft			AK-29				
R2A	1meg			AB-70				Bass, Channel 1
B	1meg			SR-70				Bass, Channel 2
C	Shaft			AK-29				
R3A	1meg			AB-70				Treble, Channel 1
B	1meg			SR-70				Treble, Channel 2
C	Shaft			AK-29				
R4A	1meg			AB-69				Balance, Channel 2
B	1meg			SR-69				Balance, Channel 1
C	Shaft			AK-29				
R5A	100Ω	2(WW)		WN-101	A43-100	W11-084	R100L	Hum Adjust
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	100K				R32	100K			
R7	100K				R33	100K			
R8	250K				R34	250K			
R9	2000Ω				R35	2000Ω			
R10	70K				R36	70K			
R11	120K				R37	120K			
R12	1meg				R38	1meg			
R13	1meg				R39	1meg.			
R14	250K				R40	250K			
R15	3000Ω				R41	3000Ω			
R16	50K				R42	250K			
R17	250K				R43	3000Ω			
R18	3000Ω				R44	100K			
R19	100K				R45	10K			
R20	10K				R46	100K			
R21	100K				R47	250K			
R22	10K 2W				R48	2000Ω			
R23	250K				R49	100K			
R24	2000Ω				R50	10K			
R25	100K				R51	150K			
R26	10K				R52	150K			
R27	150K				R53	500K			
R28	150K				R54	500K			
R29	500K				R55	200Ω 5W	PW5-200	5W-SQ-200	
R30	500K				R56	500Ω 5W	PW5-500	5W-SQ-500	
R31	200Ω 5W	PW5-200	5W-SQ-200		R57	500Ω 5W	PW5-500	5W-SQ-500	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	OLSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ Ⓐ .85A	450VCT .180A DC	5V Ⓐ 1.9A						
	SEC. 3	SEC. 4	SEC. 5						
	6.3V Ⓐ 2.8A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	OLSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω CT	16Ω Tap Ⓐ 8Ω, 4Ω						
T3	5000Ω CT	16Ω Tap Ⓐ 8Ω, 4Ω						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		3A 250V					AGC 3	

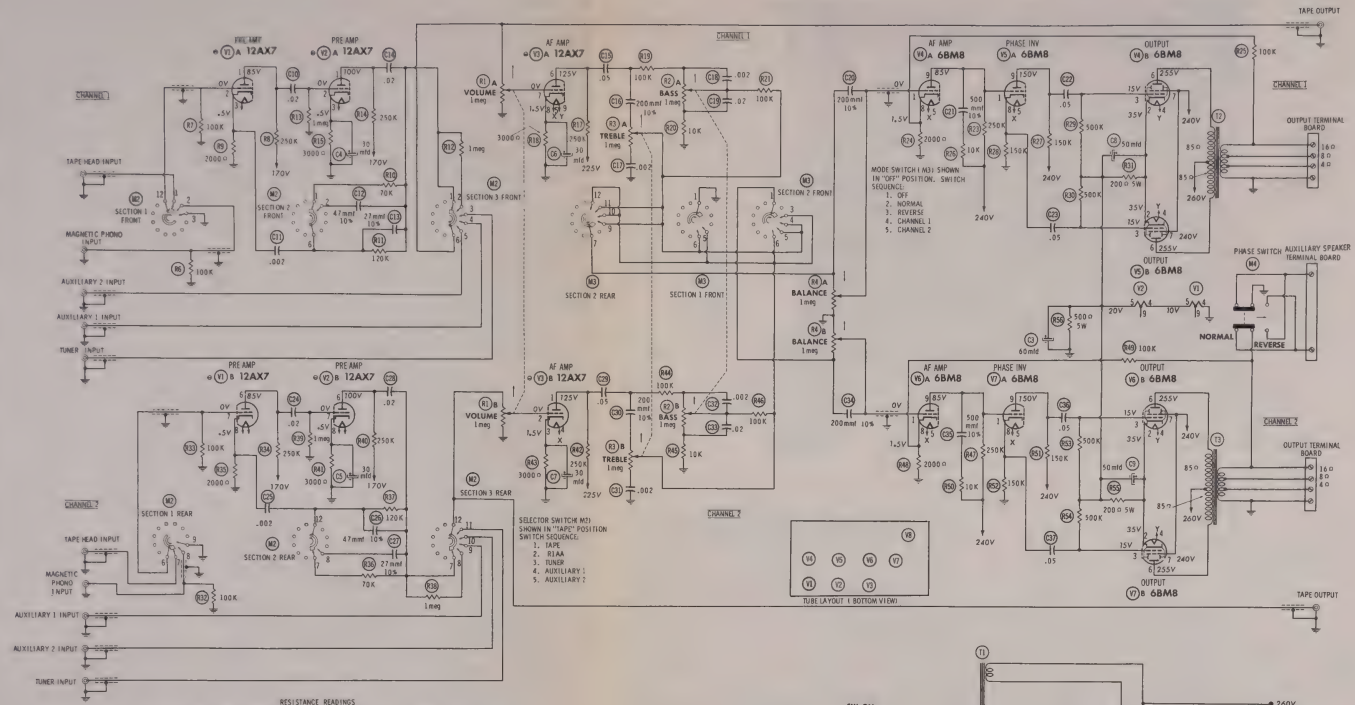
MISCELLANEOUS

ITEM No.	PART NAME	OLSON PART No.	NOTES
M2	Switch		Function Selector (Rotary
M3	Switch		Mode (Rotary)
M4	Switch		Phase (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†310K	100K	2000Ω	0Ω	15Ω	†310K	100K	2000Ω	NC
V2	12AX7	†310K	1meg	3000Ω	15Ω	30Ω	†310K	1meg	3000Ω	NC
V3	12AX7	†260K	0Ω	3000Ω	25Ω	25Ω	†260K	0Ω	3000Ω	25Ω
V4	6BM8	250K	230Ω	500K	25Ω	25Ω	†85Ω	†500Ω	2000Ω	†250K
V5	6BM8	†250K	230Ω	500K	25Ω	25Ω	†85Ω	†500Ω	150K	†150K
V6	6BM8	250K	230Ω	500K	25Ω	25Ω	†85Ω	†500Ω	2000Ω	†250K
V7	6BM8	†250K	230Ω	500K	25Ω	25Ω	†85Ω	†500Ω	150K	†150K
V8	5AR4	NC	960K	NC	50Ω	NC	53Ω	NC	960K	

ALL MEASUREMENTS MADE IN "STEREO TAPE" POSITION.
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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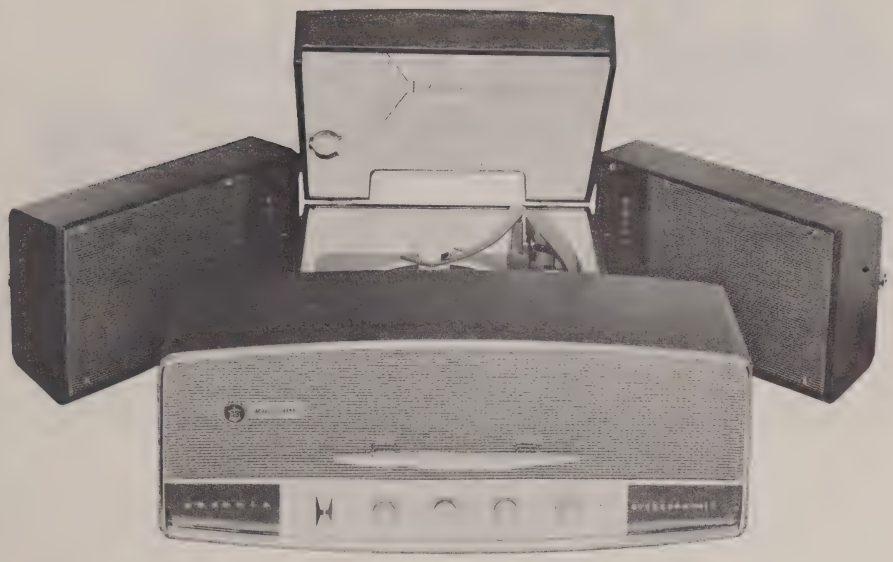
OLSON MODEL AM-147 (ST-15)

PHOTOFACT® Folder

**PHONOLA
MODEL 2260**

PHONOLA
MODEL 2260



PHONOLA
MODEL 2260

TRADE NAME	Phonola Model 2260
MANUFACTURER	Waters Conley Co., Rochester, Minnesota
TYPE SET	AC Operated Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles RATING 59 Watts, .58 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #14554 — SEE V-M 1201 PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

SET 532 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V2	Channel 1 Output	6AQ5A
V3	Channel 2 Output	6AQ5A
V4	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	13535	AFH4-79	D0663	FP447	TMQ-4550	TVL-4737	
B	■40	400							
C	▲20	25							
D	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C3	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C6	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C10	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA PHONOLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K *	½	13801	BT-159				Loudness, Channel 1
B	500K *	½		STR-159				Loudness, Channel 2
R2A	500K	½	13800	B-60	AD47-500K-Z		FB55A	Treble, Channel 1
B	500K	½		SR-60	Not Req.		RU55A	Treble, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	2meg	½	13228	B-76	AD47-2meg-Z		FA26A	Bass, Channel 1
B	2meg	½		SR-76	Not Req.		RU26A	Bass, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	1meg	½	13501	B-69	A47-1meg-S	Q11-137	U54	Balance, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps @ 80K and 160K.

RESISTORS

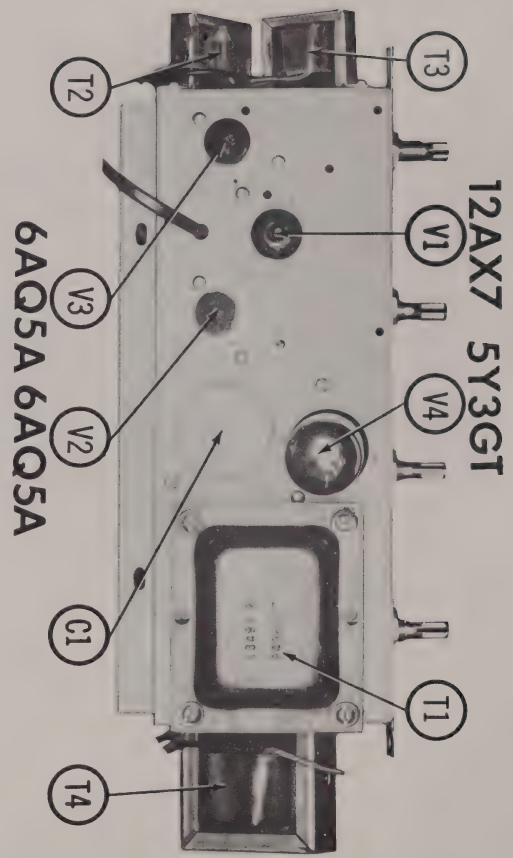
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	180K			
R6	220K			
R7	1500Ω			
R8	22K			
R9	47K			
R10	150Ω 2W			
R11	8200Ω			
R12	180K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R13	220K			
R14	22K			
R15	8200Ω			
R16	47K			
R17	2700Ω 1W			
R18	47Ω			Note 1
R19	47Ω			Note 1

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: PHONOLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2						
T1	117V ⓐ .58A	540VCT ⓐ .080A DC	5V ⓐ 2A	13496N ①		PM-8404		R-110B ②	① Alternate Part # 13496 ② Tape CT on 6.3V Winding.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓐ 1.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: PHONOLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.						
T2	3600Ω	3-4Ω	14163A ②	A-3025	A-3850 ①	24S48	S-41Z	① Drill New Mtg. Hole (s) ② Alternate Part #14163 ③ Alternate Part #14164 ④ Alternate Part #14167
T3	3400Ω	3-4Ω	14164A ③	A-3025	A-3850 ①	24S48	S-41Z	
T4	4200Ω CT	3-4Ω	14167B ④	A-2901 ①	A-3870	22S62	S-59Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA: PHONOLA PART No.	QUAM PART No.	NOTES
	SIZE	FIELD	V. C. IMP.			
SP1	6"	PM	3-4Ω	14328	6A21	
SP2	8"	PM	3-4Ω	13975	8A21	
SP3	6"	PM	3-4Ω	14328	6A21	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA: PHONOLA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		NOTES
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	W. C. 14713†	W. C. 14714†	13TBX	Not Req.	26SD	Not Req.	8TA4-SD	N-8TA-SD *	† Includes Needles.

CABINETS & CABINET PARTS

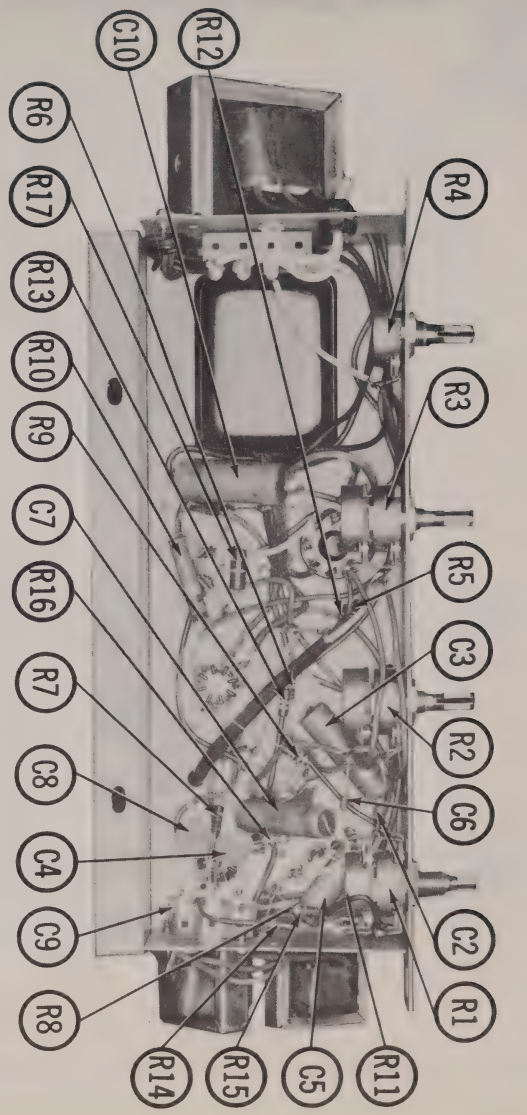
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

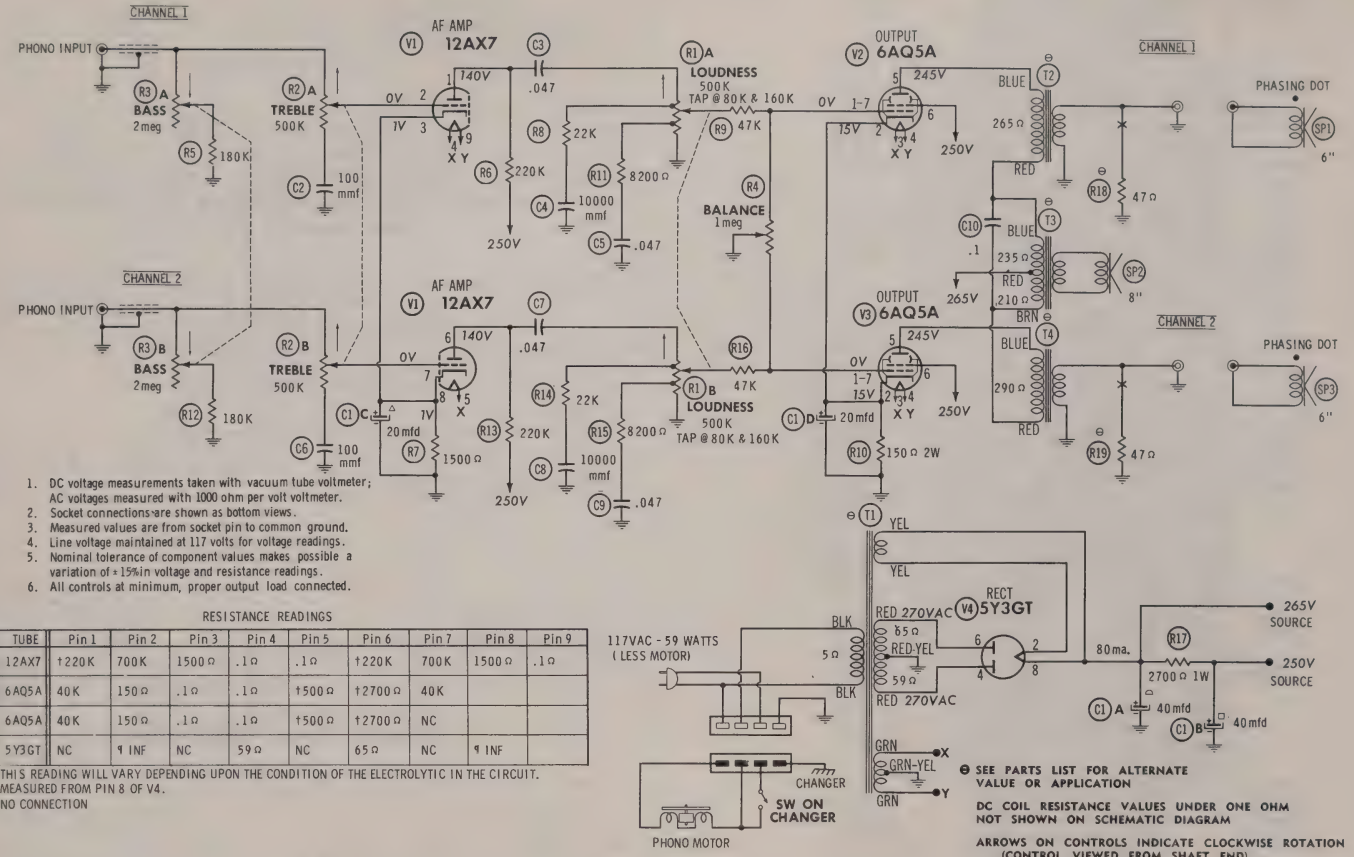
NAME	PART NO.	DESCRIPTION
Knob	13440-1C	
Cabinet	14537	
Handle	13682-C	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†220K	700K	1500Ω	.1Ω	.1Ω	†220K	700K	1500Ω	.1Ω
V2	6AQ5A	40K	150Ω	.1Ω	.1Ω	†500Ω	†2700Ω	40K		
V3	6AQ5A	40K	150Ω	.1Ω	.1Ω	†500Ω	†2700Ω	NC		
V4	5Y3GT	NC	¶ INF	NC	59Ω	NC	65Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHONOLA MODEL 2260

PHOTOFACT® Folder

**RCA VICTOR MODEL
1XF1E, J, LE (Ch. RC-1201)**

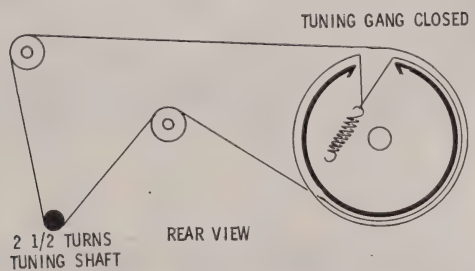
RCA VICTOR MODEL
1XF1E, J, LE (Ch. RC-1201)

MODEL 1XF1E

RCA VICTOR MODEL
1XF1E, J, LE (Ch. RC-1201)

TRADE NAME	RCA Victor Models 1-XF-1E, 1-XF-1J, 1-XF-1LE (Ch. RC-1201)		
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.		
TYPE SET	AC-DC Operated 6 Tube FM-AM Receiver		
POWER SUPPLY	110 – 120 Volts AC-DC	RATING	25 Watts, .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC

DRIVE CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KK479

DATE 5 – 61 SET 532 FOLDER 12

SET 532 FOLDER 12

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

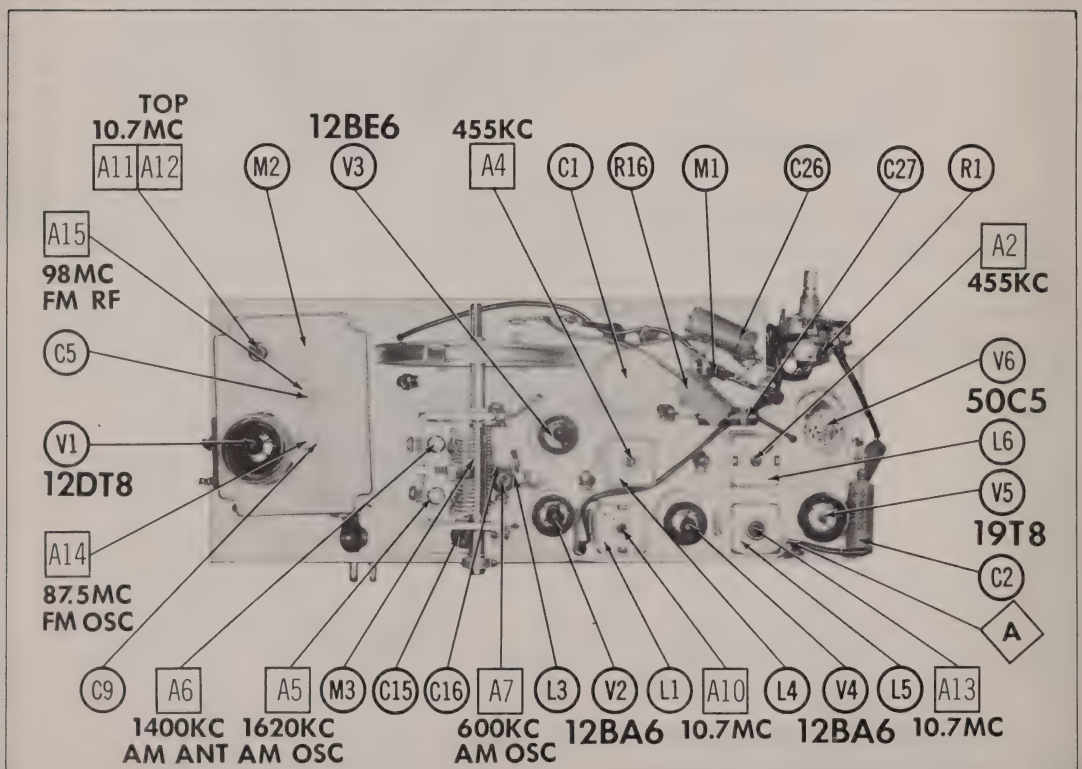
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A7.....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A3, A4.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A5, A6.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A9, A10, A13....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A11, A12.....	GENERAL CEMENT #9440
A14, A15.....	GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A6	"
4.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.



CHASSIS—TOP VIEW

FM ALIGNMENT INSTRUCTIONS

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of 1st FM IF amp. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
6.	Across FM antenna terminals.	"	"	"	A11, A12	"
7.	High side thru .01mfd to pin 1 (grid) of 1st FM IF amp. Low side to chassis.	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of 1st FM IF Amp. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10	Disconnect Stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	Across FM antenna terminals.	"	"	"	A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
7.	High side thru .01mfd to pin 1 (grid) of 1st FM IF amp. Low side to chassis.	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
8.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108.5MC (400∿ FM Mod.)	(FM) High end stop.	Across voice coil.	FM Tuner String Drive Collar.	Adjust for maximum output.
9.	"	87.5MC	Low end stop.	"	A14	Adjust for maximum output. Repeat steps 8 and 9.
10.	"	98MC	98MC Signal.	"	A15	Adjust for maximum output.

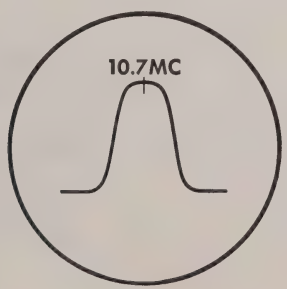
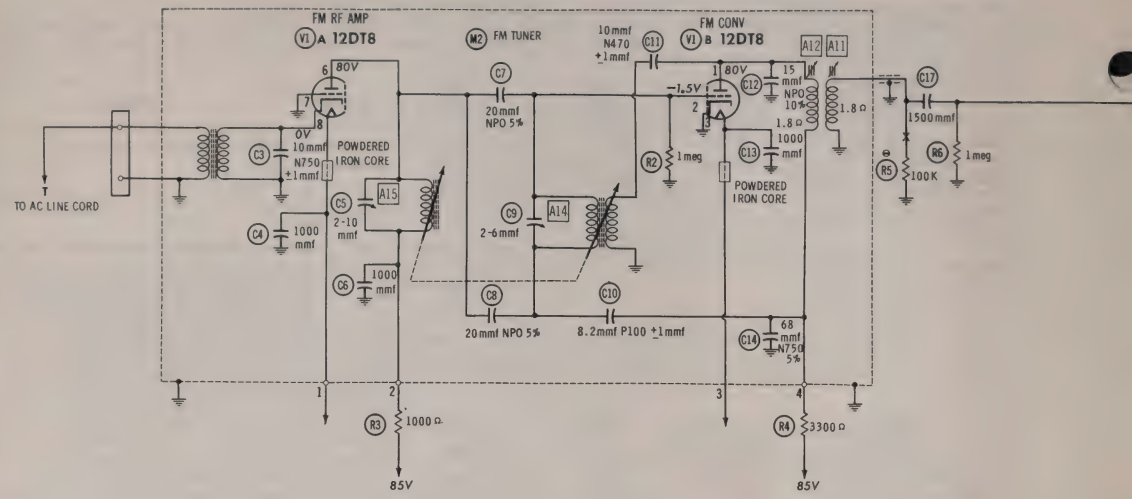
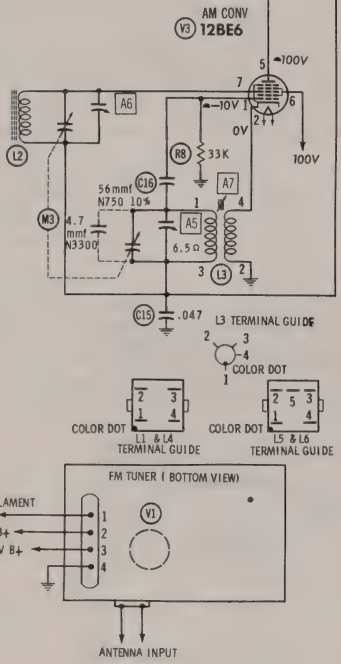
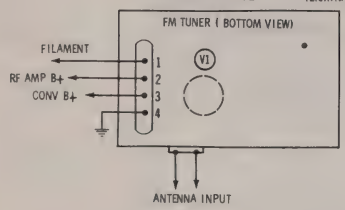


FIG. 1

FIG. 2







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†4500Ω	1meg	0Ω	50Ω	65Ω	†2200Ω	0Ω	.1Ω	0Ω
V2	12BA6	1meg	0Ω	130Ω	145Ω	†1400Ω	†1400Ω	0Ω		
V3	12BE6	33K	.1Ω	50Ω	35Ω	▲†1200Ω	▲†1200Ω	▲3.2meg		
V4	12BA6	1meg ▲4.3meg	0Ω	35Ω	20Ω	†1400Ω	†1400Ω	0Ω		
V5	19T8	500K	22K	500K	0Ω	20Ω	▲1meg	0Ω	1.5meg	†470K
V6	50C5	150Ω	NC	65Ω	130Ω	470K	†1200Ω	†265Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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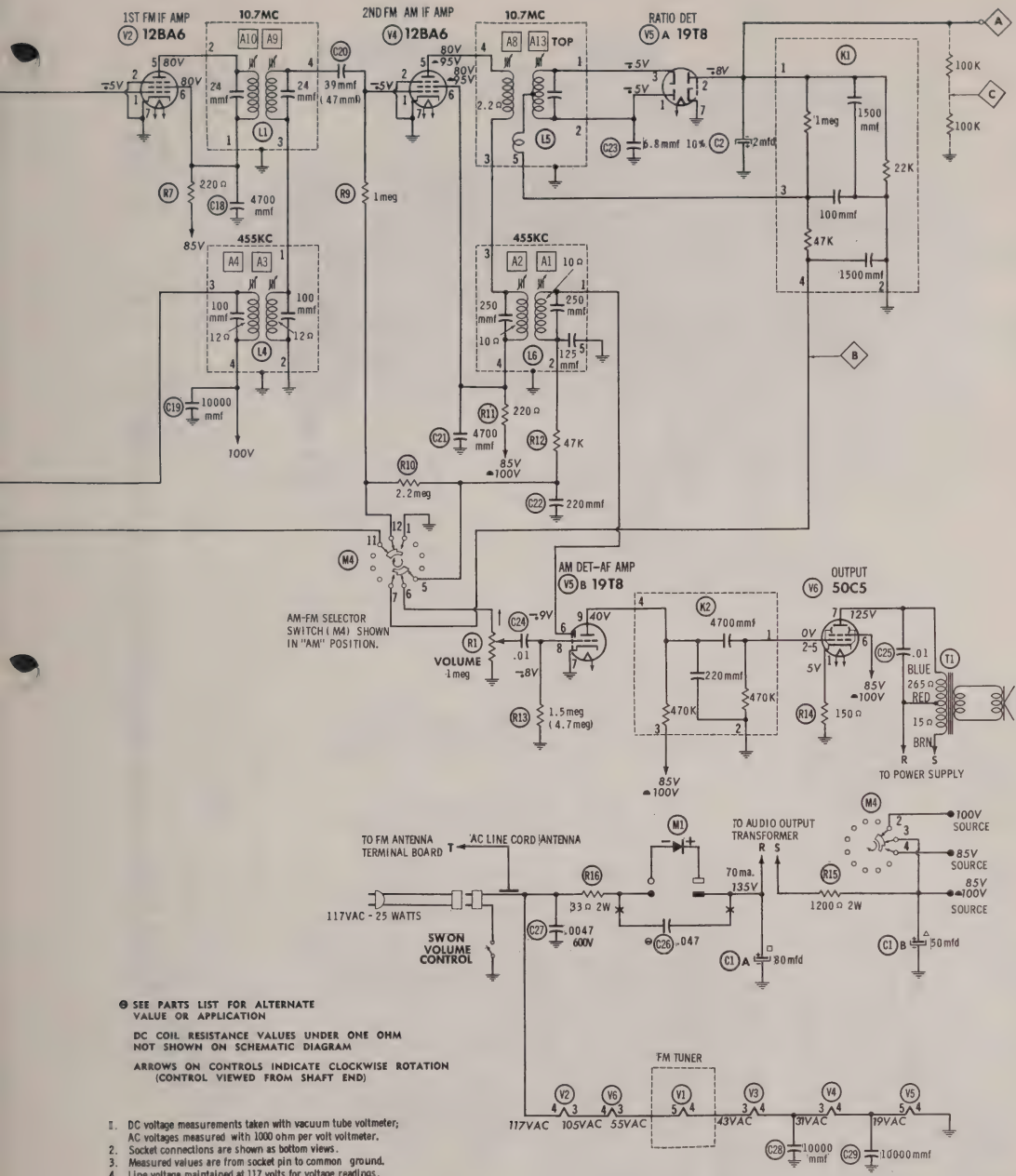


⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RCA VICTOR MODEL
1XF1E, J, LE (Ch. RC-1201)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	12DT8	V5	Ratio Det. -AM Det. -	19T8
V2	1st FM IF Amplifier	12BA6		AF Amp.	
V3	AM Converter	12BE6	V6	Output	50C5
V4	2nd FM-AM IF Amp.	12BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪80	175	110008	PWH3-13-70	XB0181	FP216.2	TMD-2135	TVL-2442.1	
B	▲50	150							
C2	2	50	79181	PRS1300	BBR2-50	TC302	TD-2-50	TVA-1301	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

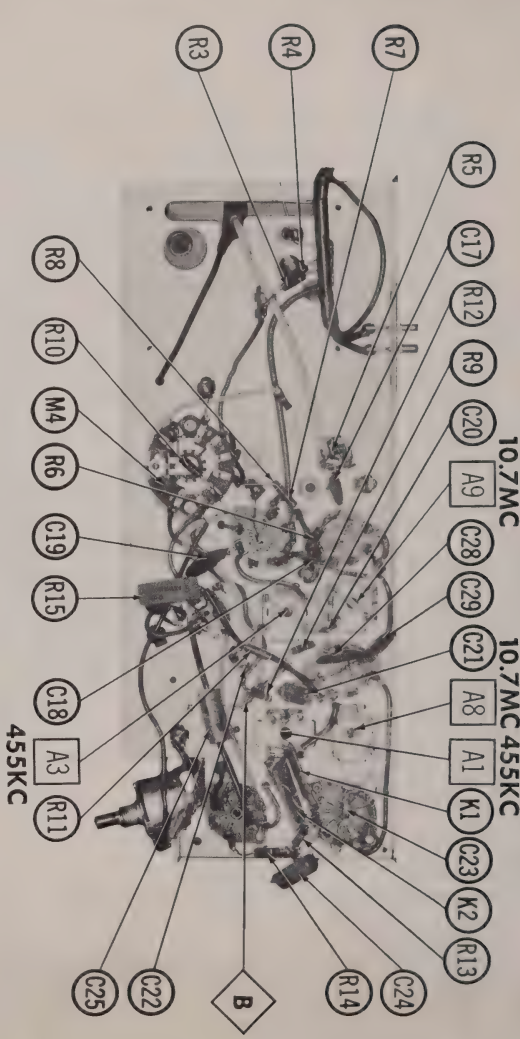
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10 N750 ±1mmf		N750-SI 10	TCN-10	C10Q10U	CCTN-100	CN7-410	10TCU-Q10
C4	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	2-10							
C6	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	20 NPO 5%		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C8	20 NPO 5%		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C9	2-6							
C10	8.2 P100 ±1mmf					*		
C11	10 N470 ±1mmf					*		
C12	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	68 N750 5%			TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C15	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C16	56 N750 10%		N750-SI 56	TCN-56	C10Q56U	CCTN-56	CN7-456	10TCU-Q56
C17	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C18	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	39	(47) †	DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C21	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C22	220		SI 220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C23	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C24	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C25	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C26	.047 400V	Note 1	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C27	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in early versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	110007	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			NotReq.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	1meg			Note 1
R3	1000Ω			
R4	3300Ω			
R5	100K			
R6	1meg			
R7	220Ω			
R8	33K			
R9	1meg			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R10	2.2meg			(4.7meg) *
R11	220Ω			
R12	47K			
R13	1.5meg			
R14	150Ω			
R15	1200Ω 2W			
R16	33Ω 2W			

Note 1. Not used in early productions.
* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA VICTOR PART No.	REPLACEMENT DATA
K1	Ratio Detector Network	100mmf, (2) 1500mmf, 22K, 47K, 1meg	110004	
K2	Audio Coupling	220mmf, 4700mmf, (2) 470K	110003	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RCA VICTOR PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	2nd FM IF	110005	FM-254	1463	RTC-8699	T633	
L2	Loopstick	108999	BC-418	705-A		T532	
L3	AM Osc.	108997	BC-381	71-OSC	RTC-8648	T502	
L4	1st AM IF	108995	BC-352	12-C1	RTC-8632	T607	
L5	Ratio Detector	110006	FM-255	1465	RTC-8600	T635	
L6	2nd AM IF	108996	BC-355	12-C6	RTC-8634	T609	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RCA VICTOR PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω Tap @ 6%	3-4Ω	79283	A-3031			S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA VICTOR PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	104099	4A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	RCA VICTOR PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.070A	110043	1N1763	2F4	SR200	Silicon

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M2	FM Tuner	107004	Complete, Less Tube
M3	Tuning Cap.	108994	AM, 2 Gang (Ant. 11–284mmf, Osc. 10–113mmf)
M4	Switch	108993	Function Selector (Rotary Type)

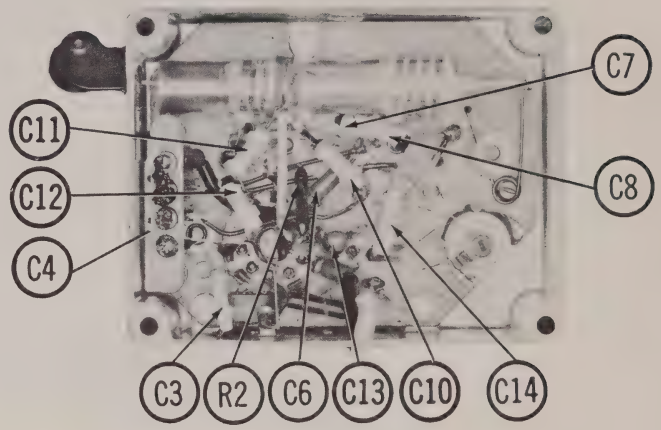
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Window	110010	
Dial Pointer	108998	
Dial	110016	Tuning
Knob	110013	Tuning, Volume (White)
Knob	110000	Function Selector (White)
Cabinet	Y7116	Aqua/Champagne White, Model 1-XF-1LE
Cabinet	Y7114	Champagne White, Model 1-XF-1E
Cabinet	Y7115	Moonmist Gray/Charcoal, Model 1-XF-1J

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874



FM RF SUBCHASSIS

PHOTOFACT® Folder

SYLVANIA MODELS 8F15B, 8F16 (Ch. 652-1, 653-1)

SYLVANIA MODELS 8F15B, 8F16 (Ch. 652-1, 653-1)

MODEL 8F15B

SYLVANIA MODELS 8F15B, 8F16 (Ch. 652-1, 653-1)

TRADE NAME	Sylvania Models 8F15B, 8F16 (Ch. 652-1, 653-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC - DC Operated 8 Tube FM-AM Receiver
POWER SUPPLY	110 – 120 Volts AC-DC RATING 25 Watts, .27 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1650KC FREQ. MOD. 88 – 108MC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KK473

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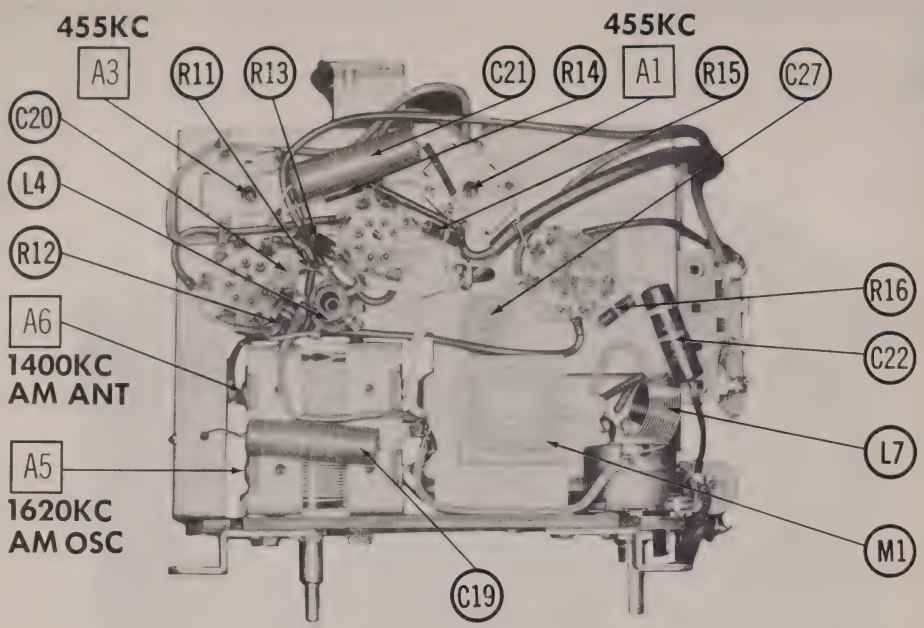
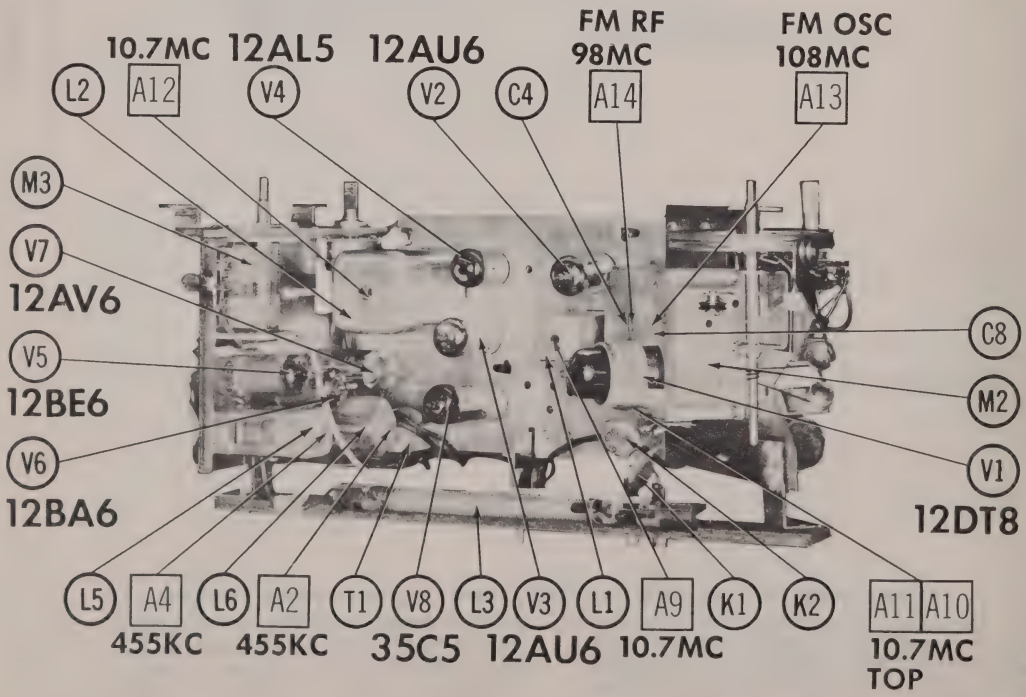
SET 532 FOLDER 13



AM CHASSIS-BOTTOM VIEW



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.	
Suggested Alignment Tools:	A1 thru A4, A8, A9. . . GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
	A5, A6. . . . . GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
	A10, A11. . . . . GENERAL CEMENT #9440
	A7, A12. . . . . GENERAL CEMENT #9091, 9091-L WALSCO #2542
	A13, A14. . . . . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	Loop	1400KC	1400KC Signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp to point Ⓐ. Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
5.	"	"	"	Vert. amp to point Ⓑ. Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals with 300Ω in series with high side.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
7.	"	98MC	98MC	"	A14	"

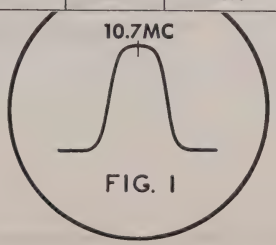


FIG. 1

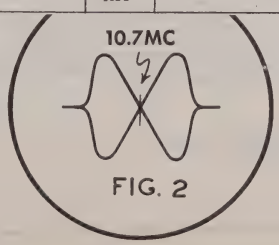
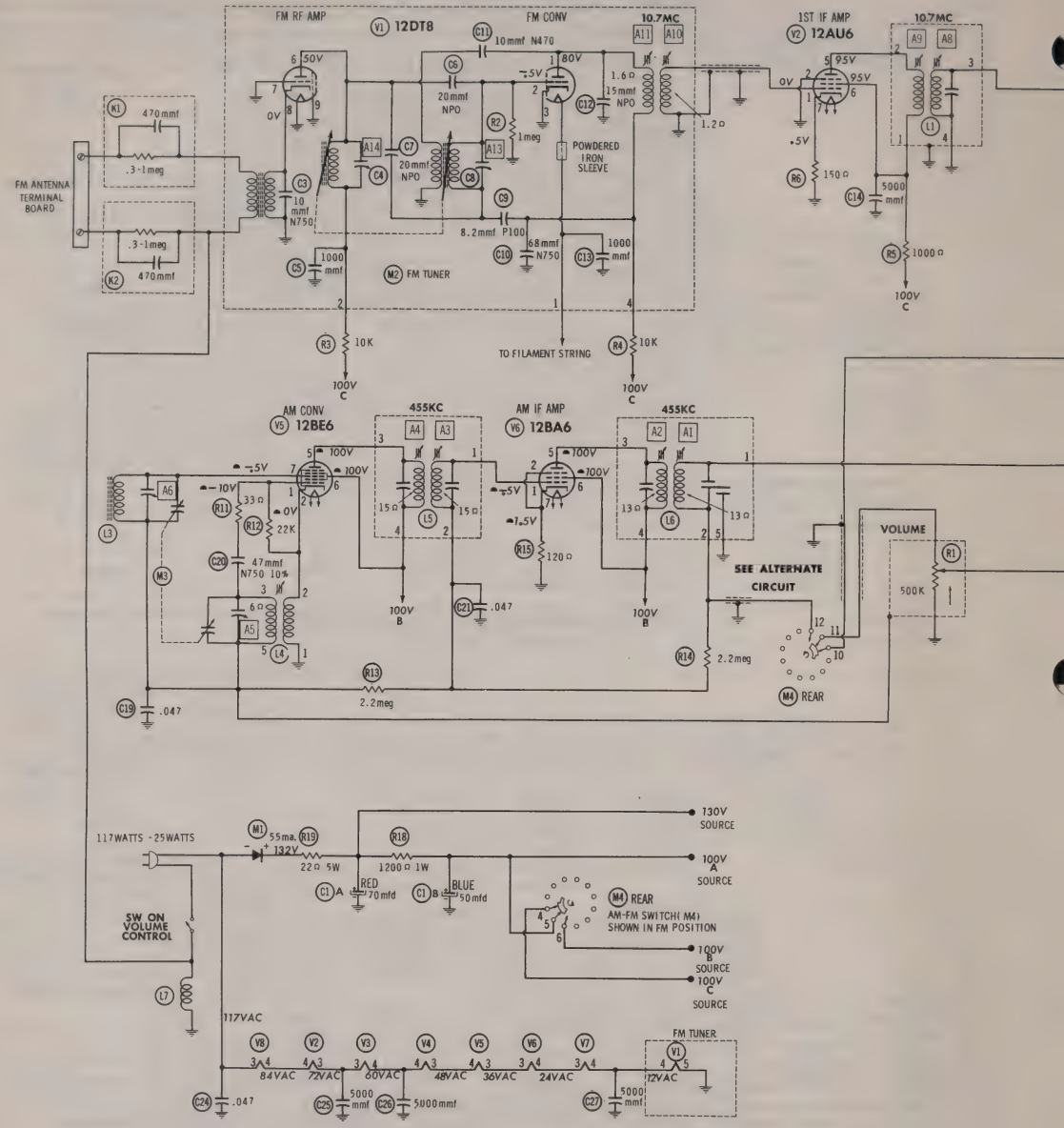


FIG. 2



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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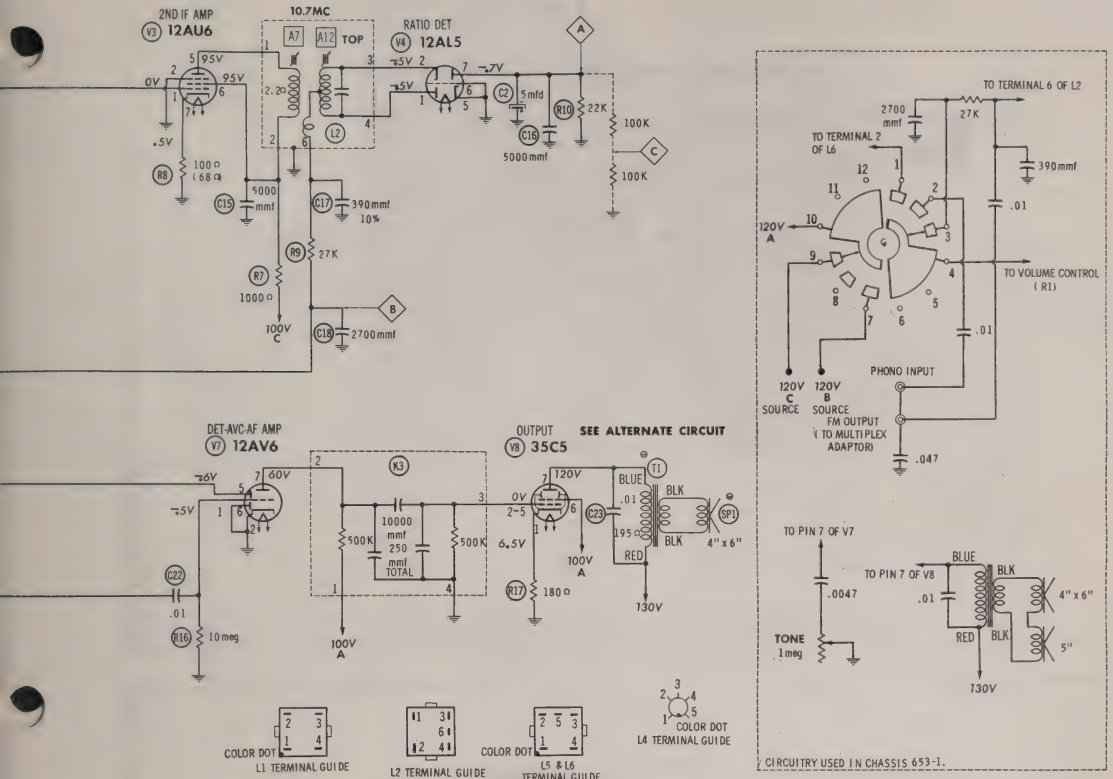
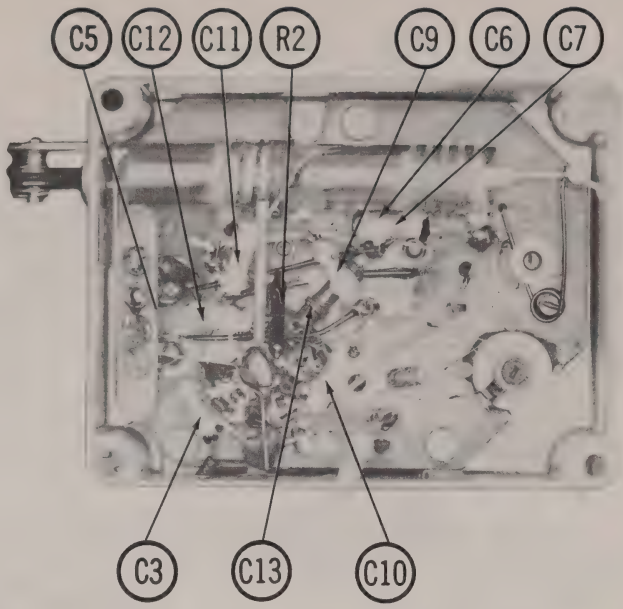


NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

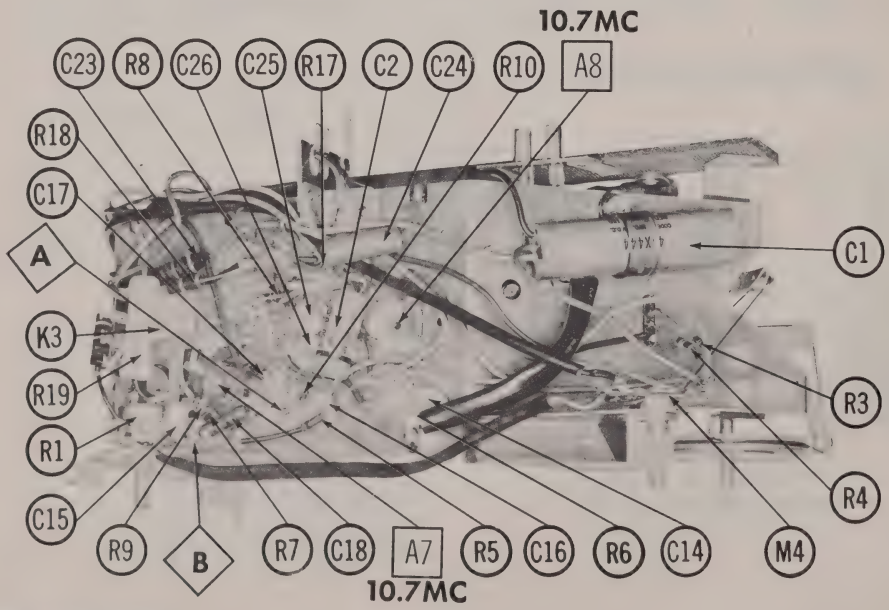
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†11K	1meg	0Ω	20Ω	0Ω	†11K	0Ω	0Ω	0Ω
V2	12AU6	1.2Ω	0Ω	120Ω	140Ω	†2200Ω	150Ω			
V3	12AU6	.8Ω	0Ω	120Ω	100Ω	†2200Ω	†2200Ω	100Ω		
V4	12AL5	525K	525K	80Ω	100Ω	0Ω	0Ω	22K		
V5	12BE6	22K	.8Ω	40Ω	60Ω	▲†1200Ω	▲†1200Ω	▲.5meg		
V6	12BA6	▲2.7meg	120Ω	80Ω	60Ω	▲†1200Ω	▲†1200Ω	120Ω		
V7	12AV6	10meg	0Ω	40Ω	20Ω	▲500K	0Ω	†500K		
V8	35C5	180Ω	NC	200Ω	140Ω	500K	†1200Ω	†215Ω		

ALL MEASUREMENTS TAKEN IN "FM" PSOITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION



FM RF SUBCHASSIS-BOTTOM VIEW



FM-AUDIO CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON •		SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	12DT8	V5	AM Converter	12BE6
V2	1st FM IF Amplifier	12AU6	V6	AM IF Amplifier	12BA6
V3	2nd FM IF Amplifier	12AU6	V7	Det. -AVC-AF Amp.	12AV6
V4	Ratio Detector	12AL5	V8	Output	35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	161-2024	PRS2240	BBRD8515	TCD498	TDLD-12	TVA-2462	
B	50	150							
C2	5	50	161-1056	PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10 N750		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C4								
C5	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C8								
C9	8.2 P100					*		
C10	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C11	10 N470					*		
C12	15 NPO		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C13	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	390 10%		DI-390	D6-391	L10T39	CCD-391	GP339	10TS-T39
C18	2700		DI-2700	DD-272	BYA10D27	CCD-272	GP227	10TS-D27
C19	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C20	47 N750 10%		N750-DI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C21	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C22	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C23	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C24	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	1meg			
R3	10K			
R4	10K			
R5	1000Ω			
R6	150Ω			
R7	1000Ω			
R8	100Ω			(68Ω) *
R9	27K			
R10	22K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	33Ω			
R12	22K			
R13	2.2meg			
R14	2.2meg			
R15	120Ω			
R16	10meg			
R17	180Ω			
R18	1200Ω 1W			
R19	22Ω 5W			Pt. #F22

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA	
K1	FM Antenna Filter	470mmf, .3-1meg	190-0056	Centralab	RC-471
				Sprague	AC1-1
K2	FM Antenna Filter	470mmf, .3-1meg	190-0056	Centralab	RC-471
				Sprague	AC1-1
K3	Audio Coupling	250mmf, 10000mmf, 500K, 500K	190-0057	Aerovox	PA-112-3
				Centralab	PC-80
				Sprague	T-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	2nd FM IF	123-0038	FM-254	1463	RTC-8599	T633	
L2	Ratio Detector	127-0003	FM-255	1465	RTC-8600	T635	
L3	Loopstick	581-0022					
L4	AM Osc.	113-0079	BC-387	71-OSC	RTC-8648	T510	
L5	1st AM IF	121-0036	BC-352	12-C1	RTC-8632	T607	
L6	2nd AM IF	122-0037	BC-355	12-C6	RTC-8634	T609	
L7	Line Choke	145-0037					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3300Ω	3-4Ω	143-0089①	A-3025	A-3332	24S53	S-16X	① Part #143-0088 used in Model 8F16

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/2	152-0066	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	3-4Ω	539-4607	46A07	* Used in Model 8F16 Only.
	5"	PM		539-0511 *		

PARTS LIST AND DESCRIPTIONS (Continued)

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SYLVANIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.055A	517-0026 *	1N1763 ♦	100 *	SR200 ♦	* Selenium ♦ Silicon

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	FM Tuner	170-0044	Complete
M3	Tuning Cap.	170-0045	AM, 2 Gang (Ant. 13–245mmf, Osc. 24–160mmf)
M4	Switch	573-0022	Selector (Rotary Type) Chassis 652-1
		573-0023	Selector (Rotary Type) Chassis 653-1

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

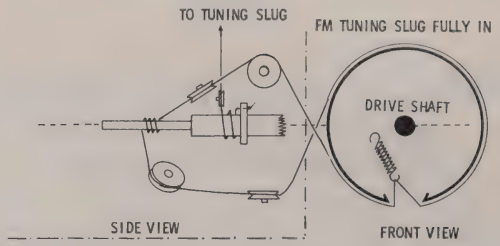
NAME	PART NO.	DESCRIPTION
AM Dial	740-0337	Indicator, Model 8F15B
AM Dial	741-0082	Indicator, Model 8F16
FM Dial	740-0338	Indicator, Model 8F15B
FM Dial	741-0083	Indicator, Model 8F16
Knob	740-0334	Tuning
Knob	740-0335	Volume, (Also Function Selector on Model 8F16)
Knob	740-0339	Function Selector, Model 8F15B
Knob	740-0336	Tone, Model 8F16
Cabinet	813-0142	Model 8F15B

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

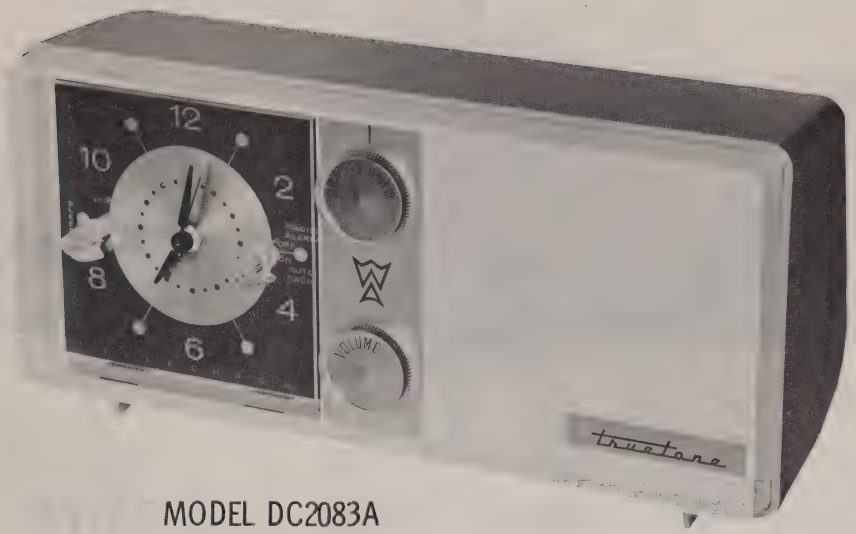
DRIVE CORD STRINGING



PHOTOFACT® Folder

**TRUETONE MODELS
DC2082A, DC2083A, B**

TRUETONE MODELS
DC2082A, DC2083A, B



MODEL DC2083A

TRUETONE MODELS
DC2082A, DC2083A, B

TRADE NAME	Truetone Models DC2082A, DC2083A, DC2083B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Missouri
TYPE SET	AC Operated 5 Tube AM Receiver with Electric Clock (Model DC2082A does not have Clock)
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 26 Watts, .25 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	540 – 1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang (front section). Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1650KC	"	"	A5	"
3.	Loop	1500KC	1500KC Signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KG459

SET 532 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	150-157A	PRS2220	BBRD8415	WD220	TDLD-10	TVA-2460	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	220 N5600					*		
C3	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-473	GEM-4147	2TM-S50
C4	.05 400V	Note 1	P488N-05	DD-503	CUB4S5	4DP-3-473	GEM-4147	4TM-S50
C5	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C6	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-473	GEM-4147	4TM-S50
C9	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	120-176A	B-60	A47-500K-Z	Q13-133	U48	Volume Note 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

Note 1. Model DC2082A uses Part #120-175A (with switch).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

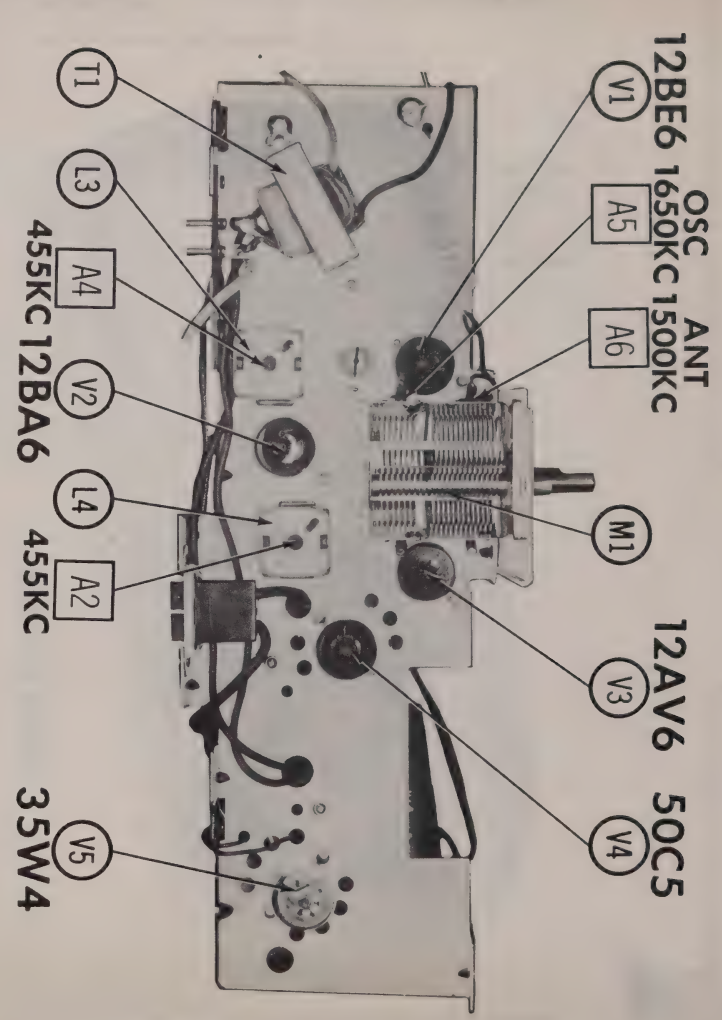
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2.2meg				R6	6.8meg			
R3	22K				R7	150Ω			
R4	2.2meg				R8	1800Ω 1W			(1500Ω) *
R5	150Ω								

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Audio Coupling	250mmf, 5000mmf, 250K, 470K		Aerovox PA-112-2 Centralab PC-71 Sprague T-4

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	132-147F ①	BC-419	2004		T528	①Part #132-147C used in Model DC2082A
L2	Osc.	136-141E-2 ②	BC-393	69-OSC	RTC-8646	T503	
L3	Input IF	130-114	BC-352	12-C1	RTC-8632	T607	②Includes R3,Part#136-141E used in Model DC2082A.
L4	Output IF	130-114	BC-353	12-C2	RTC-8633	T608	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3000Ω	3-4Ω	138-152A ①	A-3025	A-3332	24S53	S-12X	① Part #138-149 used in Model DC2082A

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	175-156 *	4A07	* Used in Model DC2083A, B
	4"	PM		175-154 †		† Used in Model DC2082A

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuning Cap.	160-137	2 Gang (Ant. 14— 356mmf, Osc. 15— 115mmf)
M2	Clock Ass'y.	207-117	(Telechron J-3) Model DC2083

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

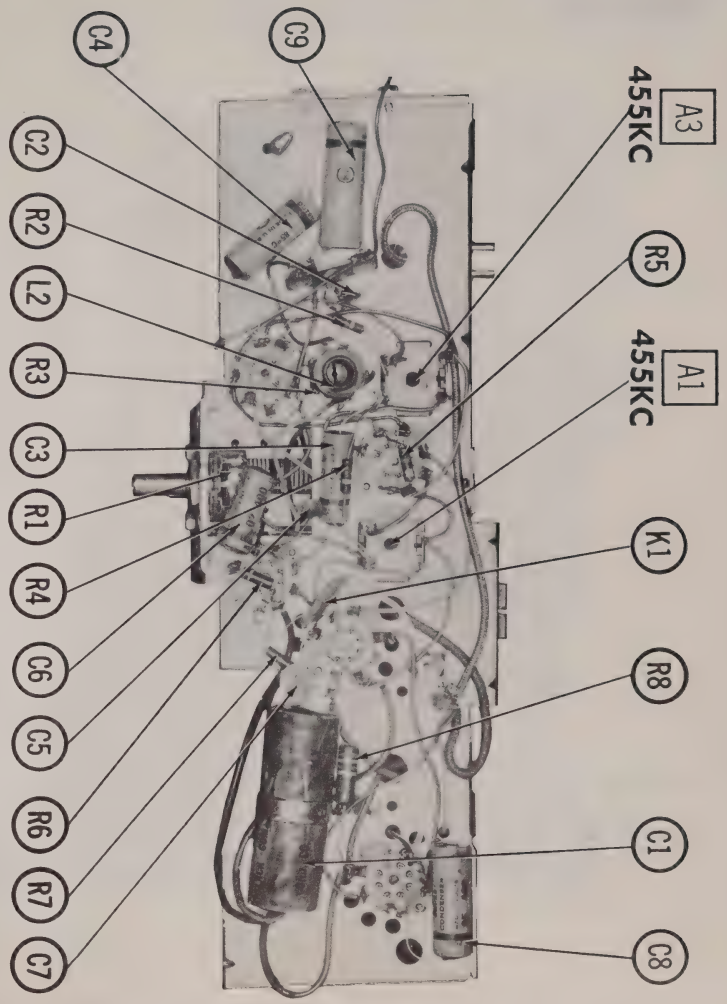
NAME	PART NO.	DESCRIPTION
Crystal	605-129-4	Clock, Model DC2083
Dial	215-243-3	Clock, Model DC2083
Knob	220-210B	Tuning, Model DC2083
Knob	220-202C	Tuning, Model DC2082A
Knob	220-203B	Volume, Model DC2082A
Knob	220-204A	Volume, Model DC2083
Knob	220-229A	Clock, Model DC2083
Cabinet Shell	210-176I	Model DC2083
Cabinet Shell	210-175	Mist Green, Model DC2082A
Cabinet Front	205-157F	White, Model DC2082A
Cabinet Front	205-162H	White, Model DC2083

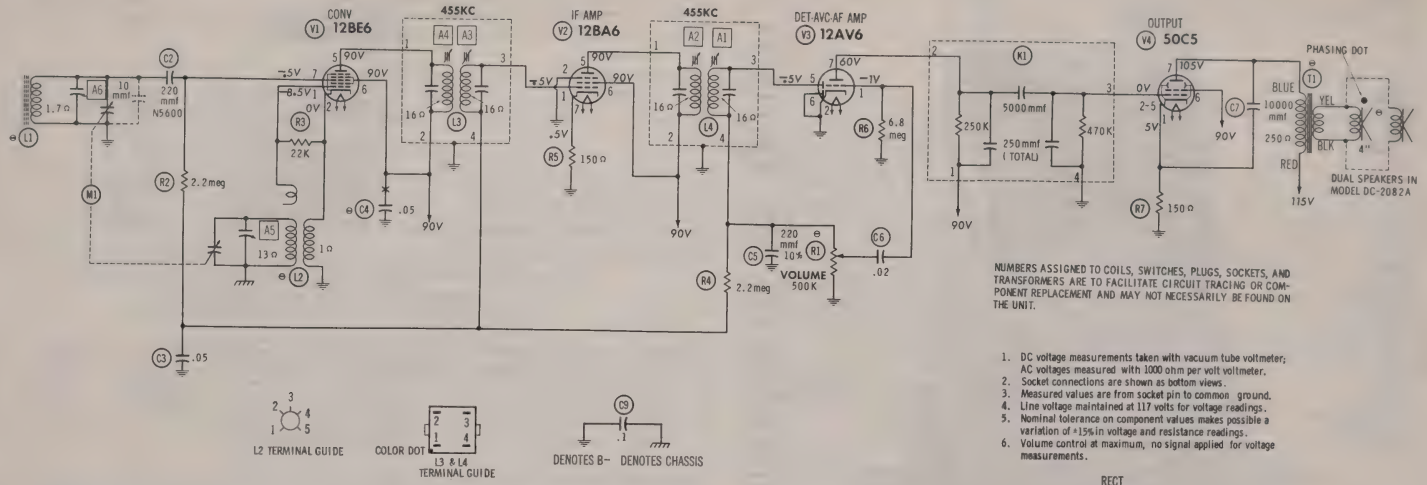
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





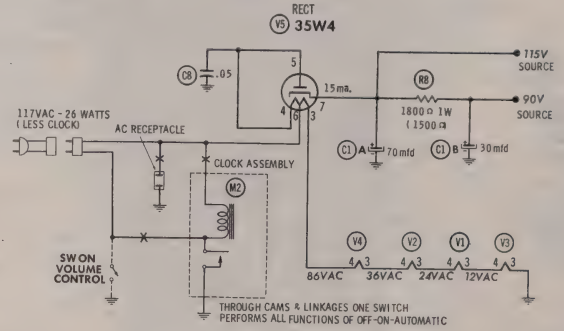
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	15Ω	30Ω	†1800Ω	†1800Ω	5meg
V2	12BA6	2.7meg	0Ω	30Ω	45Ω	†1800Ω	†1800Ω	150Ω
V3	12AV6	6.8meg	0Ω	0Ω	15Ω	500K	0Ω	†250K
V4	50C5	150Ω	470K	45Ω	150Ω	NC	†1800Ω	†250Ω
V5	35W4	TP	TP	150Ω	205Ω	205Ω	200Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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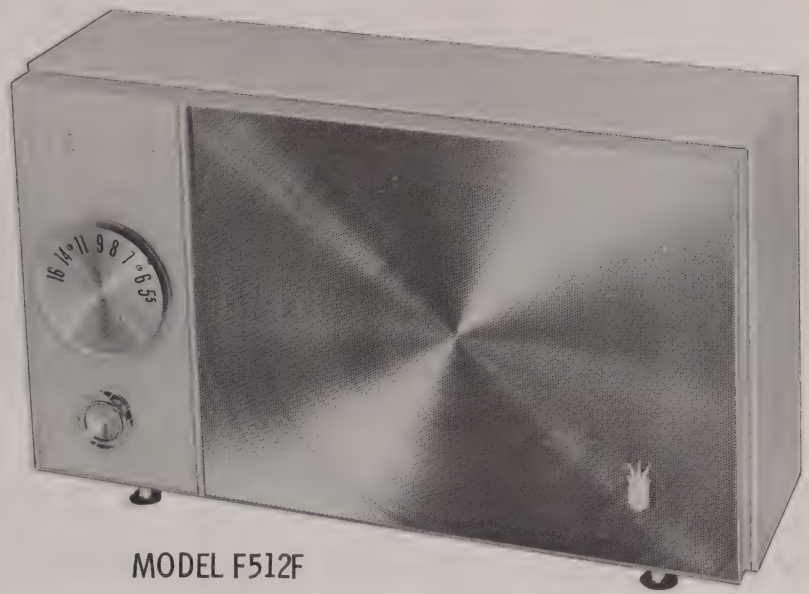
TRUETONE MODELS DC2082A, DC2083A, B

PHOTOFACT® Folder

ZENITH MODELS
F512C, F, L, W (Ch. 5F13)

ZENITH MODELS
F512C, F, L, W (Ch. 5F13)



MODEL F512F

TRADE NAME	Zenith Models F512C, F152F, F512L, F512W (Ch. 5F13)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 – 120 Volts AC-DC RATING 27 Watts, .26 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .5mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

ZENITH MODELS
F512C, F, L, W (Ch. 5F13)

SET 532 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG369

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	22-3274	PRS2220	BBRD5315	TCD497	TDLD-8	TVAS-2455*	
B	20	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V	#22-2742	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C3	7.5 10%				C10V8C			
C4	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Zenith Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	63-4690	AB-697	A47-1meg-S	B11-137	U54	Volume
B	Shaft			AK-33	RS-3/16	SK9	DS-37	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	1000Ω			
R4	100Ω			
R5	2.2meg			

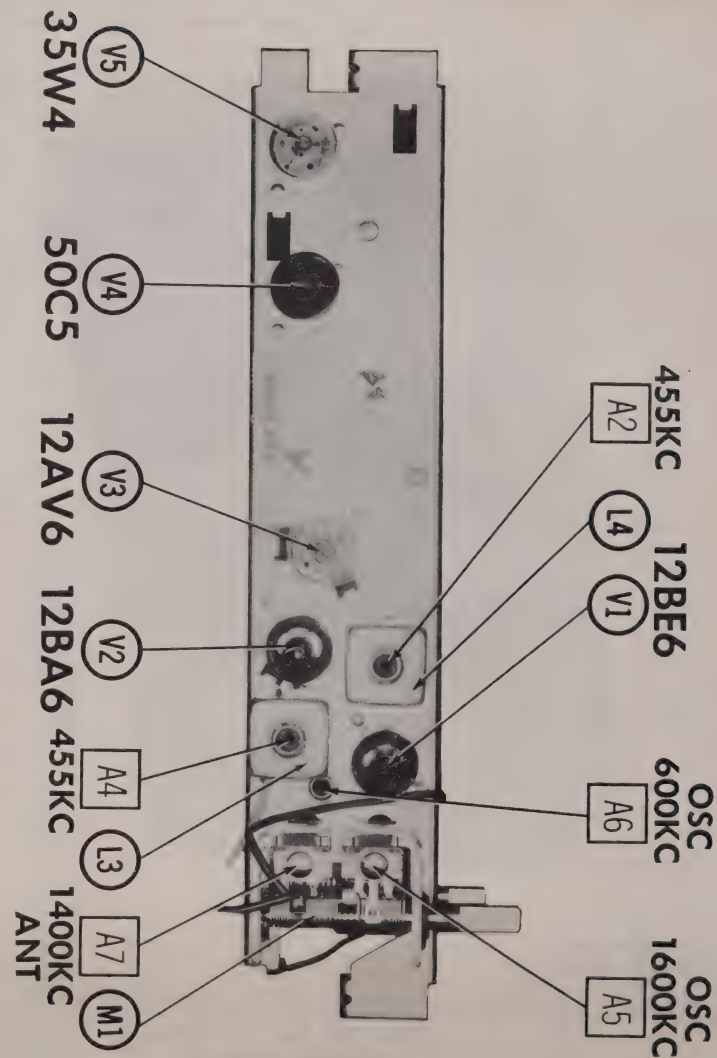
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	47K			
R7	150Ω			
R8	1000Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, (2) 5000mmf, (2) 470K, 6.8meg	105-43 (Note 1)	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	S-49134	BC-419	2004		T528	▲Drill Mounting Hole
L2	Osc.	S-50128	BC-393 ▲	71-OSC ▲	RTC-8648 ▲	T509 ▲	
L3	Input IF	95-1718	BC-356	13-PC1	RTC-8641	T614	
L4	Output IF	95-1719	BC-357	13-PC2	RTC-8642	T615	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	95-1746					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	49-925	4A07	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Tuning Cap	22-3240	2 Gang (Ant. 18—344mmf, Osc. 14—114mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

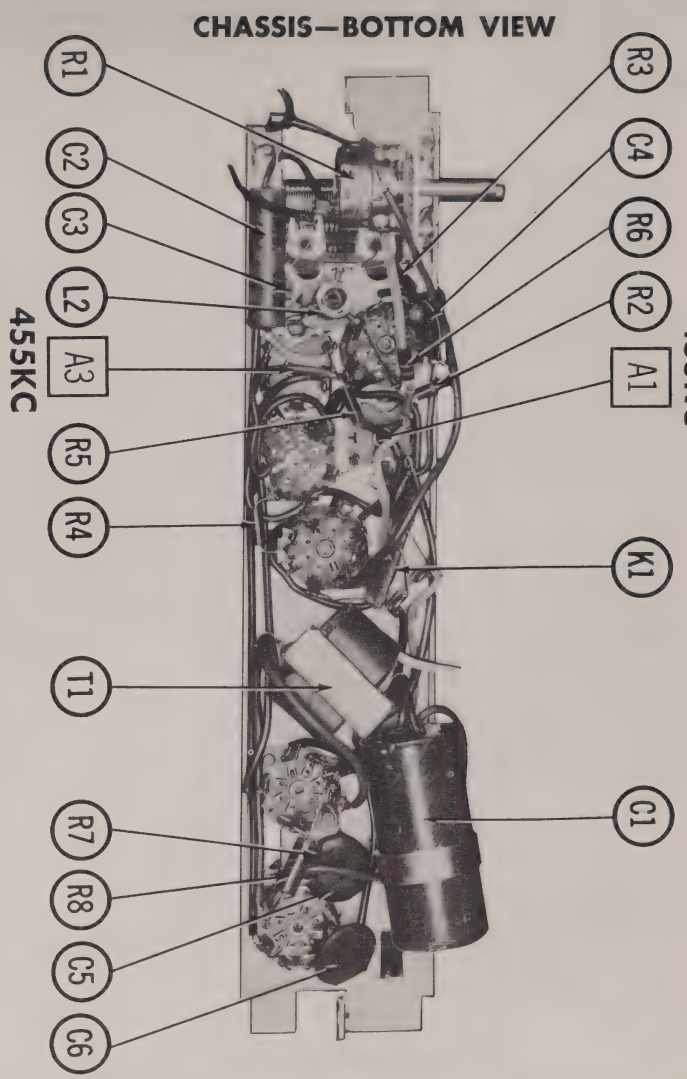
NAME	PART NO.	DESCRIPTION
Knob	46-2396	Tuning, Model F512W
Knob	46-2397	Tuning, Models F512F, F512C, F512L
Knob	S-48011	Volume, Models F512F, F512C, F512L
Knob	S-49301	Volume, Model F512W
Cabinet Front	14-2988	Model F512W
Cabinet Front	14-2989	Model F512C
Cabinet Front	14-2990	Model F512L
Cabinet Front	14-2991	Model F512F
Cabinet Rear	14-2993	Model F512W
Cabinet Rear	14-2994	Model F512C
Cabinet Rear	14-2995	Model F512L
Cabinet Rear	14-2996	Model F512F
Leg	96-272	Cabinet, Models F512C, F512F, F512L
Leg	96-299	Cabinet, Model F512W

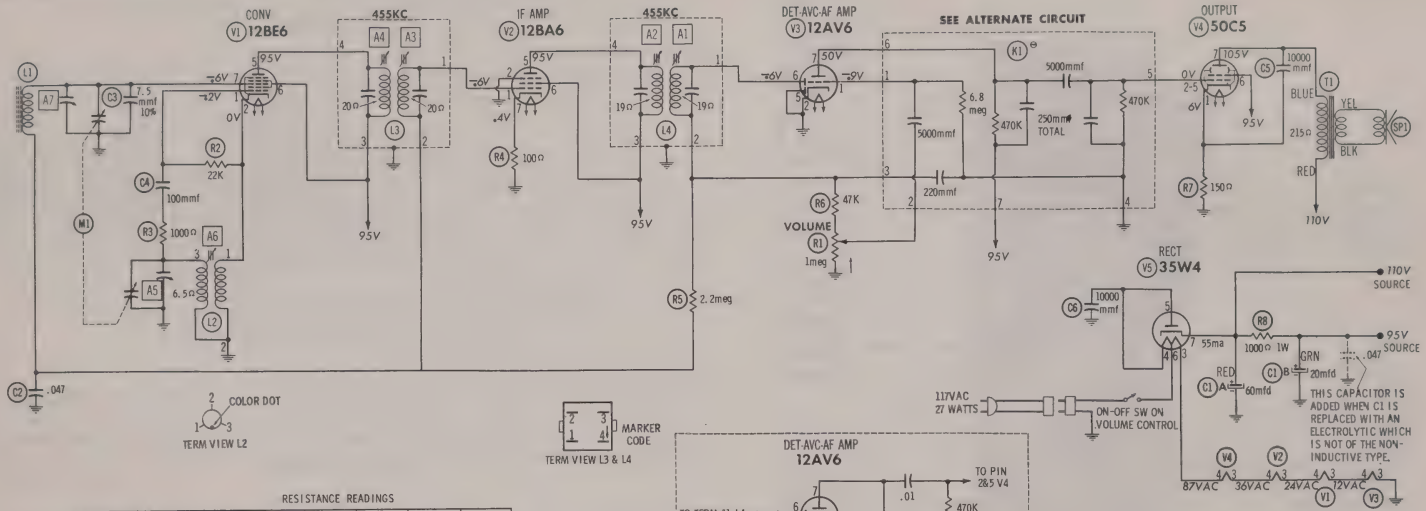
WIRING DATA

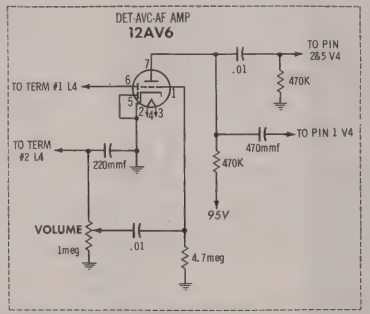
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	0Ω	15Ω	30Ω	†1000Ω	†1000Ω	3.2meg
V2	12BA6	3.2meg	0Ω	30Ω	45Ω	†1000Ω	†1000Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	15Ω	0Ω	1meg	†470K
V4	50C5	150Ω	NC	45Ω	110Ω	470K	†1000Ω	†215Ω
V5	35W4	NC	NC	110Ω	142Ω	142Ω	140Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ZENITH MODELS
F512C, F, L, W (Ch. 5F13)

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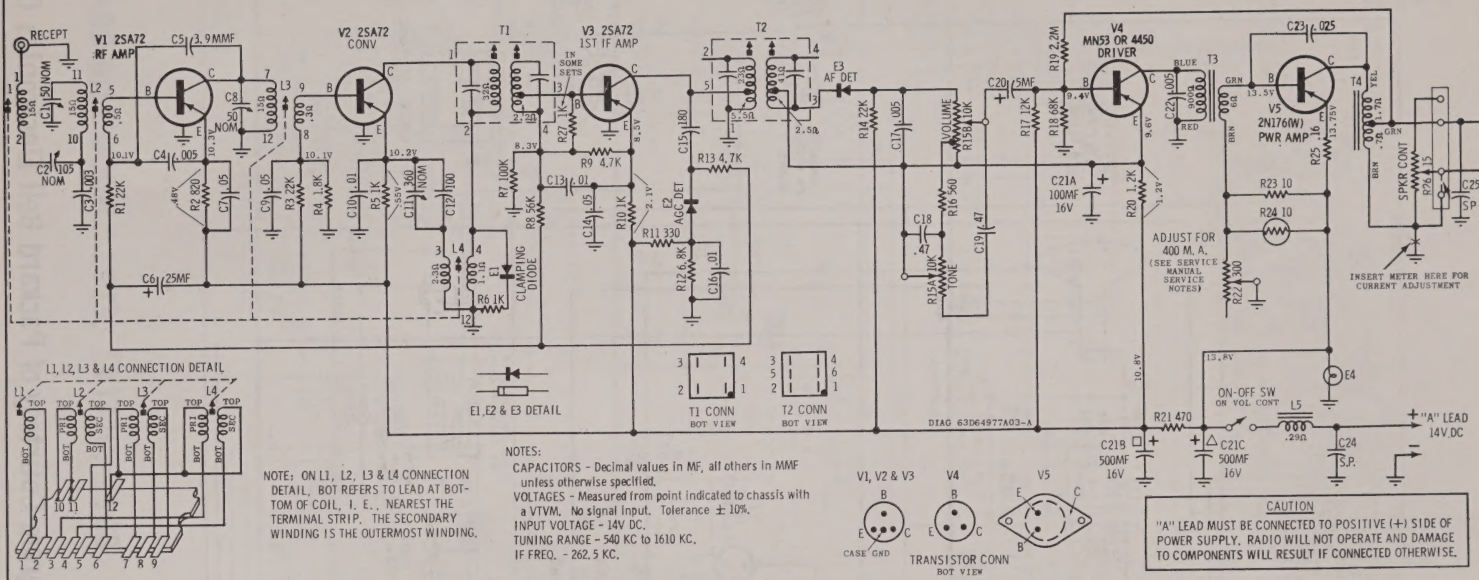


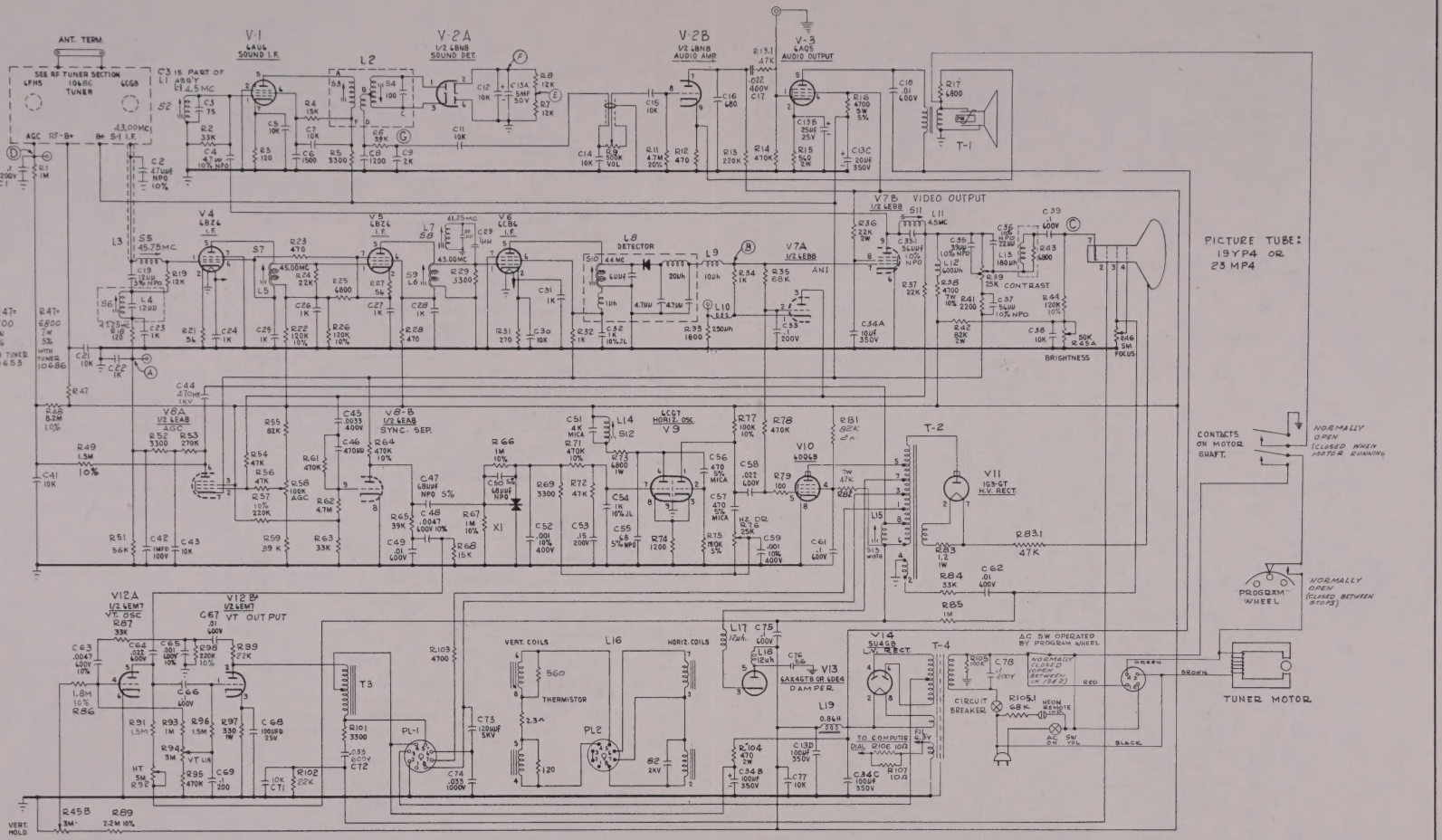
NOTE: ON L1, L2, L3 & L4 CONNECTION DETAIL, BOT REFERS TO LEAD AT BOTTOM OF COIL, I. E., NEAREST THE TERMINAL STRIP. THE SECONDARY WINDING IS THE OUTERMOST WINDING.

NOTES:
CAPACITORS - Decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM. No signal input. Tolerance ± 10%.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540 KC to 1610 KC.
IF FREQ. - 262.5 KC.

CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

MOTOROLA MODEL BKA61

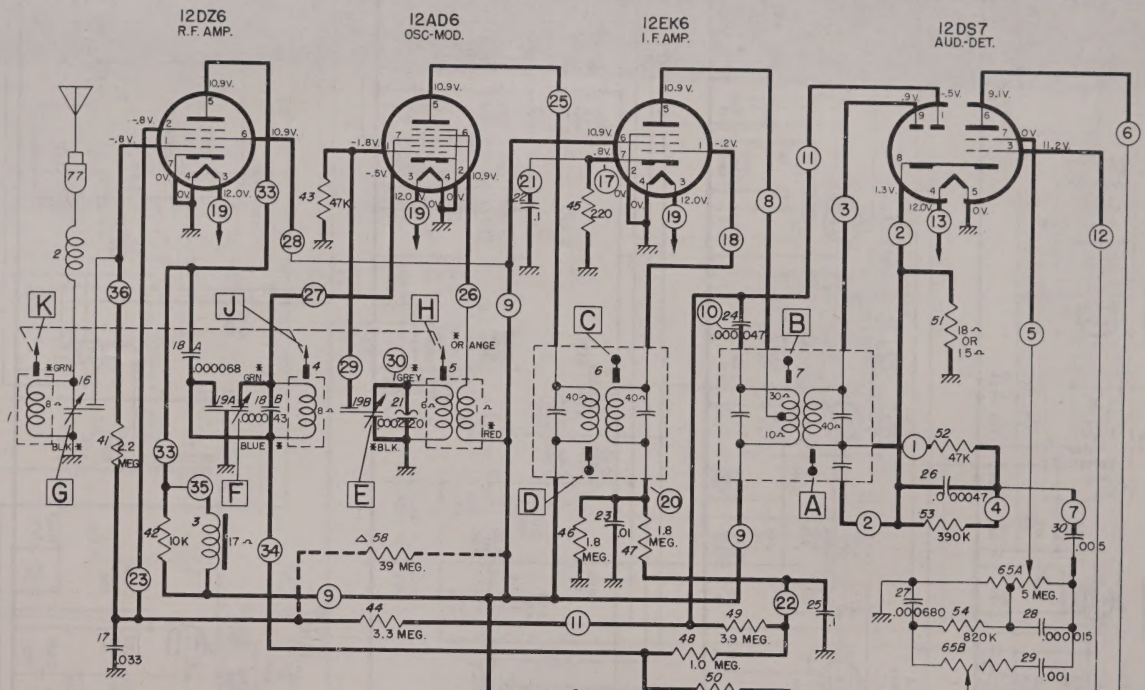
Schematic Diagram Courtesy of Motorola Inc.



PACKARD BELL MODELS 19T3, 19T3TC, 23C8, 23T3 (CH. 88-9)

Schematic Diagram Courtesy of Packard Bell Electronics Corporation

OLDSMOBILE MODEL 989392



VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM - NO SIGNAL AND 12.0 VOLTS AT ILLUS. 32.

OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.

TOTAL "A" DRAIN AT 12V. - 2.4 AMPS.

TOLERANCE ON VOLTAGES ± 10%

COLLECTOR CURRENT (Ic) 1050 M.A.

* - INDICATES LEAD FROM TUNER COIL ASS'Y.

** - BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 67) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.

+ - ILLUS. 57 IS A FUSE RESISTOR FOR THE TRANSISTOR. SERVICE WITH EXACT REPLACEMENT.

⊖ - OUTPUT TRANSFORMER WILL APPEAR SHORTED IF SHORTING TYPE SPEAKER SWITCH IS NOT HELD OPEN.

△ - WILL NOT APPEAR IN ALL RADIOS

△△ - .33 OHM MUST BE USED WHEN ILLUS. 34 IS NOT PRESENT.

⊖ - OUTPUT TRANSFORMER WILL APPEAR SHORTED IF SHORTING TYPE SPEAKER SWITCH IS NOT HELD OPEN.

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.